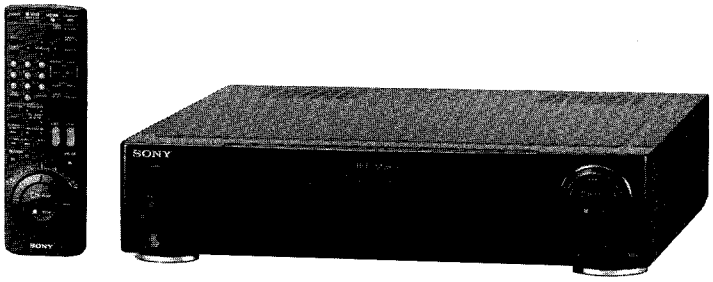
SLV-770HF/771HF/920HF
RMT-V140/V140A

SERVICE MANUAL



US Model
SLV-770HF/771HF/920HF
Canadian Model
SLV-770HF/920HF
Chilean Model
Mexican Model
Philippine Model
PX Model
Tourist Model
SLV-920HF

VHS Hi-Fi

- **Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT II for MECHANICAL ADJUSTMENTS. (9-972-816-11)**

SPECIFICATIONS

System

Format
VHS NTSC standard

Video recording system
Rotary two-head helical scanning FM system

Video signal
NTSC color, EIA standards

Tape speed
SP: 33.35 mm/s (1 3/8 inches/s)
EP: 11.11 mm/s (7/16 inches/s)
LP: 16.67 mm/s (11/16 inches/s), playback only

Maximum recording/playback time
9 hrs. in EP mode (with T-180 tape)

Fast-forward and rewind time
Approx. 1 min. 30 sec (with T-120 tape)

High-speed rewind time
Approx. 3 min. (with T-120 tape)

Tuner section

Channel coverage
VHF 2 to 13
UHF 14 to 69
CATV A-8 to A-1, A to W, W+1 to W+84

Antenna
75-ohm antenna terminal for VHF/UHF

Inputs and outputs

LINE IN 1 and 2
VIDEO IN, phono jack (1 each)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jack (2 each)
Input level: –7.5 dBs (0 dBs = 0.775 Vrms)
Input impedance: more than 47 kilohms

LINE OUT
VIDEO OUT, phono jack (1)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO OUT, phono jack (2)
Standard output: –7.5 dBs
Load impedance: 47 kilohms
Output impedance: less than 10 kilohms

CONTROL S IN
Mini jack (1)

CABLE BOX CONTROL
Phono jack (1)

Timer section

Clock
Quartz locked

Timer indication
12-hour cycle

Timer setting
Only for recording 8 programs in one month at max.

Power back-up
Built-in self-charging capacitor
Back-up duration: up to three hours at one time

– Continued on next page –

MICROFILM

VIDEO CASSETTE RECORDER

SONY®

General

Power requirements
120 V AC, 60 Hz (US, Canadian, Mexican)
110 – 240 V AC, 50/60 Hz (Chile, PX, Tourist)

Power consumption
25 W (max.)

Operating temperature
5°C to 40°C (41°F to 104°F)

Storage temperature
–20°C to 60°C (–4°F to 140°F)

Dimensions
Approx. 430 × 100 × 375 mm (w/h/d)
Approx. (17 × 4 × 14 7/8 inches) including projecting parts and controls

Weight
Approx. 5.2 kg (11 lb 7 oz)

Supplied accessories

Remote commander (1)
Size AA (R6) batteries (2)
75-ohm coaxial cable with F-type connectors (1)
AC power cord (1)
Audio/video cable (3 phono to 3 phono) (1)
Cable mouse (cable box controller) (1)

Design and specifications are subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

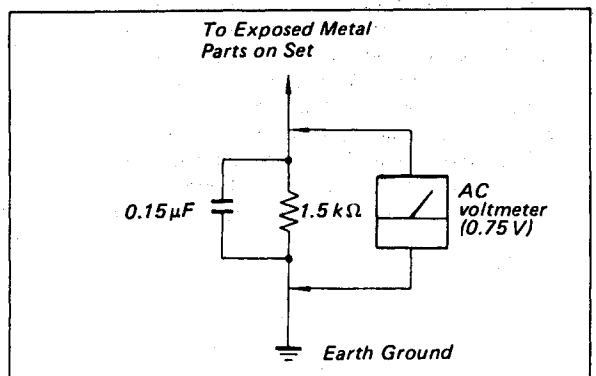


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

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SERVICE NOTE

1. RETURNING PINCH ROLLER, GUIDE ROLLER AND ELEVATOR CAM TO STOP CONDITION

1) Remove the bottom panel.
2) Turn the worm gear Ⓐ of the cam motor, located at lower of the MD, to the arrow direction Ⓑ by finger.

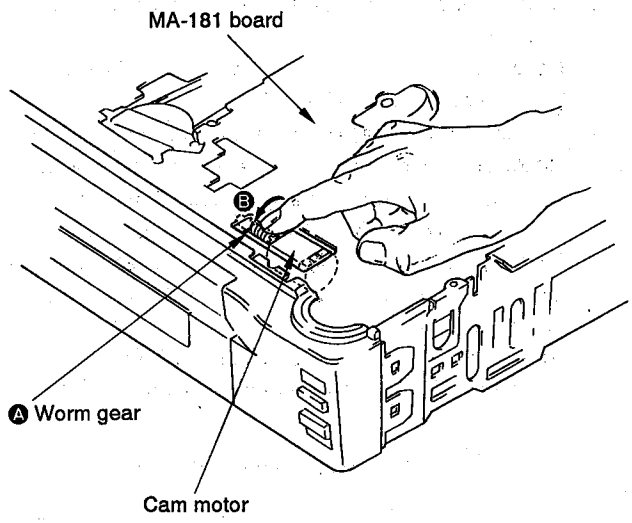


Fig. 1.

2. WINDING TAPE TO CASSETTE HALF

Turn the flywheel Ⓐ of the capstan motor to the arrow direction Ⓑ by finger, then the cassette tape will be wound to the cassette half.

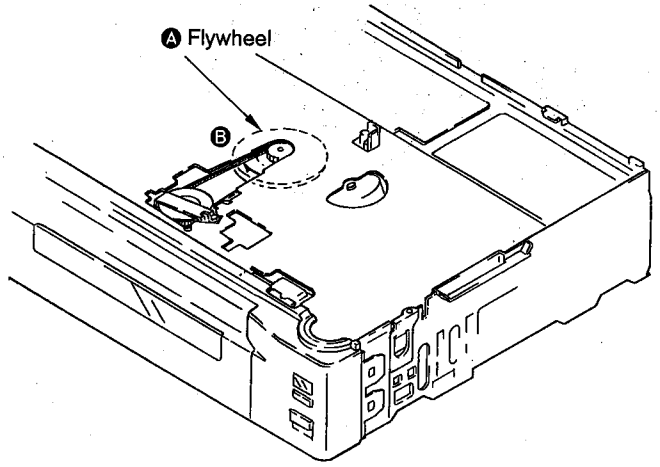


Fig. 2.

3. TAKING OUT CASSETTE WHEN UNIT IS DEFECTIVE WITH CASSETTE IN

1) Remove the upper case.
2) Turn the worm gear Ⓐ of the FL cassette compartment motor to the arrow direction Ⓑ by finger.

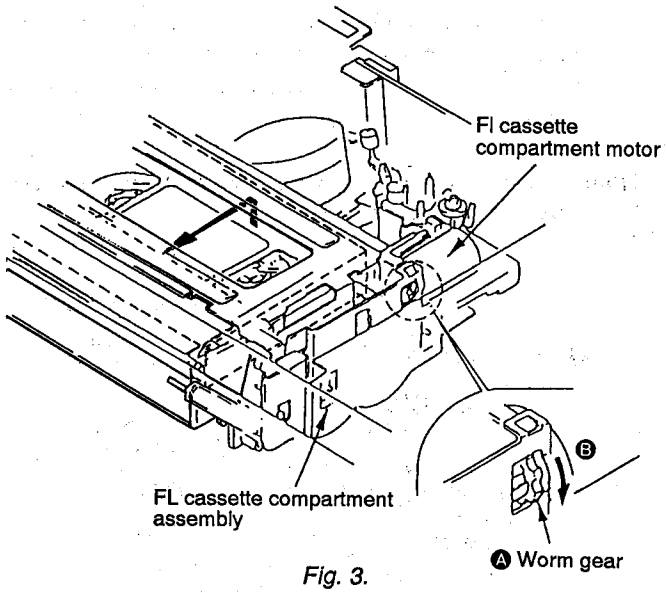


Fig. 3.

Note: When performing 1. to 3., be careful not to clog and damage the cassette tape.

4. UPPER DRUM REPLACEMENT

4-1. Removal of Upper Drum

1) Remove the screw ❶ (+P3 × 6) and take out the grounding shaft ❷. (See Fig. 4.)
2) Completely remove the rotary upper drum board and desolder the soldering indicated by the arrows.
3) Remove two screw ❸ (PSW3 × 8) and take out the rotary upper drum in the arrow direction Ⓐ. (See Fig. 5.)
   If it difficult, remove by shaking the rotary upper drum gradually.

Note: If the drum can not be removed, check wheater the solders have been removed or not again.

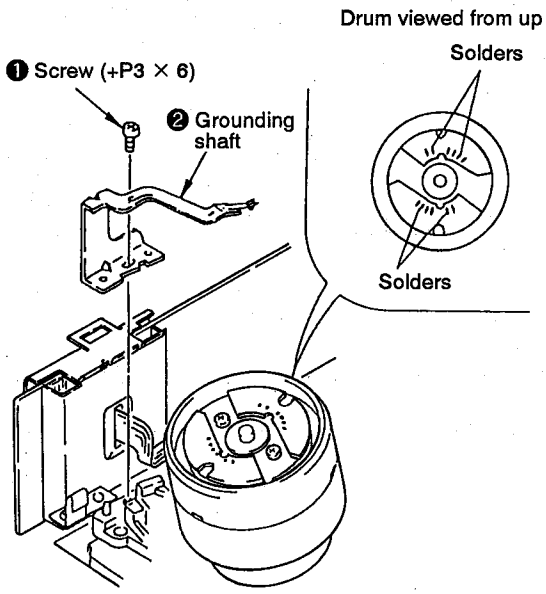


Fig. 4.

4-2. Mounting Upper Drum

1) When inserting the rotary drum into the lower drum, be careful not to blur the contacting surface with fingerprint or the like.
2) Mount the rotaly upper drum board by aligning marked ➡ with marked ⇒ of rotary transformer board (lower drum) so that the screw holes of both upper and lower drums match. (See Fig. 5.)
3) If it is difficult, mount the upper drum by shaking it gradually.
   Note: Be careful not to damage the head. Make sure that the upper drum is tightly inserted.
4) Tighten two screws ❸ (PSW3 × 8). (See Fig. 5.)
   Note: Temporary tighten two screws. After making sure that upper drum is tightly inserted, tighten the screws.
5) Solder points on the board of the rotary upper drum.
6) Fix the grounding shaft ❷ using the screw ❶ (+P3 × 6) so that the protrusin of grounding shaft end contacts the center of the drum shaft.
   Note: When attaching the grounding shaft ❷, be careful not to apply force to the spring section of it.

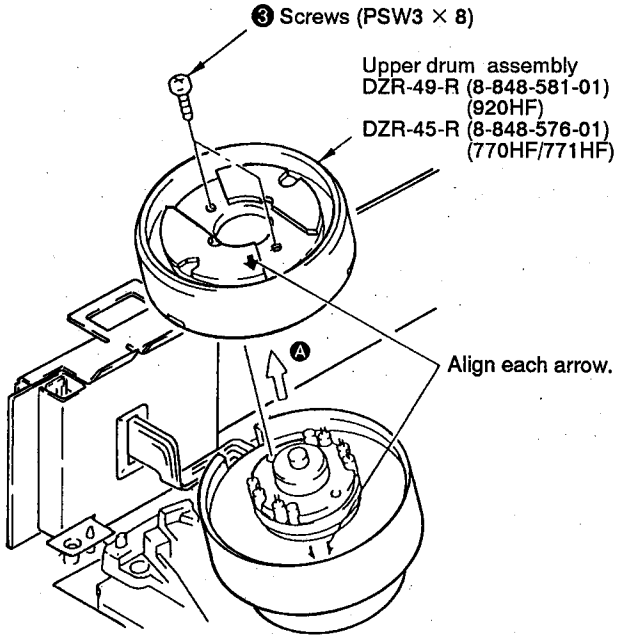
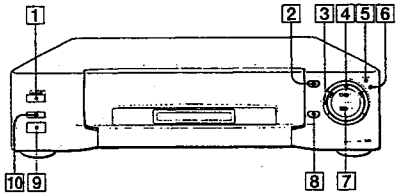


Fig. 5.

Index to parts and controls

Refer to the pages indicated in ( ) for details.

Front panel, with cover closed



1 POWER switch/indicator

2 ◀◀◀ HI-SPEED REWIND button (34)

3 DUAL MODE SHUTTLE ring (34)

4 ▷ PLAY button (34)

5 TIMER (recording) indicator (38)

6 REC (recording) indicator

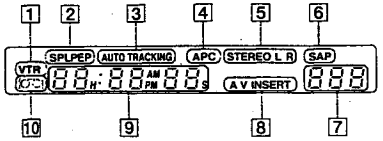
7 ■ STOP button (34)

8 ❚❚ PAUSE button (34)

9 Remote sensor (6)

10 ⏏ EJECT button (34)

Display window



1 VTR indicator (39)

2 Tape speed indicators (38)

3 AUTO TRACKING indicator (49)

4 APC indicator (49)

5 Sound indicators (35)

6 SAP indicator (40)

7 Line/channel indicator

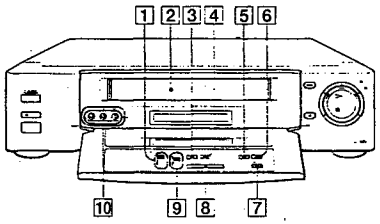
8 A V INSERT indicator (53)

9 Linear time counter/clock (22, 41)

10 Tape indicator

Index to parts and controls (continued)

Front panel, with cover opened



1 COMMAND MODE switch (6)

2 Tape compartment

3 TV/VTR button (39)

4 INPUT SELECT button (24)

5 APC (Adaptive Picture Control) indicator (49)

6 QUICK TIMER button (38)

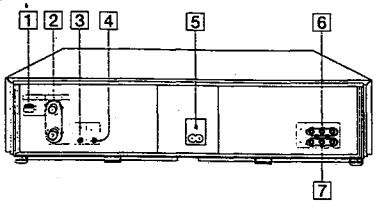
7 ● REC (recording) button (37)

8 CHANNEL buttons (25)

9 EDIT switch (56)

10 LINE IN 2 VIDEO/AUDIO jacks (51)

Rear panel



1 RF UNIT switch (57)

2 VHF/UHF connectors (10, 12, 14, 16, 18)

3 CONTROL S IN jack (55)

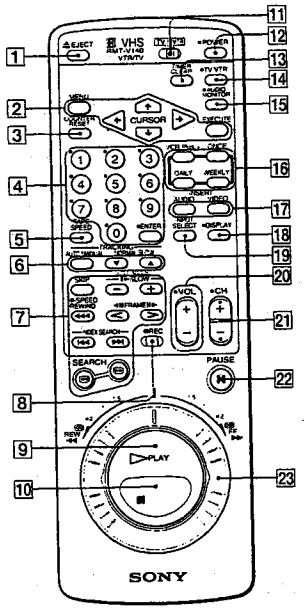
4 CABLE BOX CONTROL jack (12)

5 AC IN connector

6 LINE IN 1 AUDIO/VIDEO jacks

7 LINE OUT AUDIO/VIDEO jacks (9)

Remote commander



1 ⏏ EJECT button (34)

2 Menu operation buttons (21)
MENU button
CURSOR ↑/↓/←/→ buttons
EXECUTE button

3 COUNTER RESET button (35)

4 Number buttons and ENTER button (25)

5 TAPE SPEED button (35)

6 TRACKING buttons (49)
▼/▲ NORMAL SLOW (STILL ADJUST) buttons
AUTO/MANUAL button

7 Tape transport buttons
I► SLOW buttons (48)
SKIP button (48)
◄II / II► FRAME buttons (48)
◄◄◄ HI-SPEED REWIND button (34)
I◄◄ / ►►I INDEX SEARCH buttons (50)
⏪/⏩ SEARCH buttons (34)

8 ● REC (recording) button (37)

9 ▷ PLAY button (34)

10 ■ STOP button (34)

11 TV/VTR remote control switch (6)

12 POWER switch

13 TIMER CLEAR button (46)

14 TV/VTR button (39)

15 AUDIO MONITOR button (40)

16 VCR Plus+ buttons (44)
VCR Plus+ button
ONCE button
DAILY button
WEEKLY button

17 INSERT buttons (53)
AUDIO button
VIDEO button

18 DISPLAY button (35)

19 INPUT SELECT button (24)

20 VOL (volume) button

21 CH (channel) buttons (25)

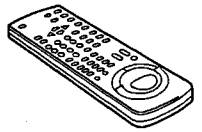
22 II PAUSE button (34)

23 DUAL MODE SHUTTLE ring (34)

Step 1: Unpacking

Check that you have the following items:

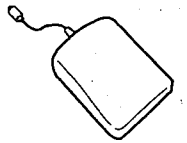
- **Remote commander**



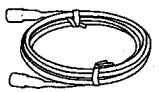
- **Size AA (R6) batteries**

- **Audio/video cable (3-phono to 3-phono)**

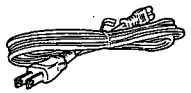
- **Cable mouse (cable box controller)**



- **75-ohm coaxial cable with F-type connectors**



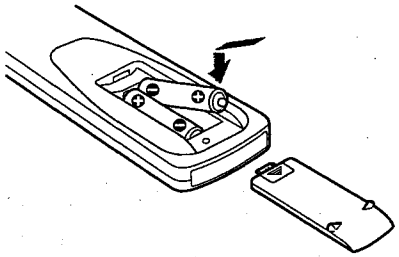
- **AC power cord**



Step 2: Setting up the remote commander

Inserting the batteries

Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.



Notes

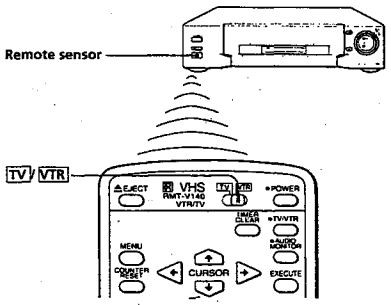
- With normal use, the batteries should last for approximately three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

Notes

- If the TV uses a different remote control system from the one programmed to work with the VCR, you cannot control your TV with the remote commander.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries in the remote commander, the code number automatically resets to 1 (Sony). Reset the appropriate code number.

Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. To operate the VCR, set the COMMAND MODE switch on the VCR to VTR 3. Buttons on the remote commander marked with a dot (•) can be used to operate your TV.



To operate	Set TV / VTR to
the VCR	VTR and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

Controlling other TVs with the remote commander

The remote commander is preprogrammed to control non-Sony TVs. If your TV is listed in the table below, set the appropriate manufacturer's code number.

1 Set TV/VTR on the top of the remote commander to TV.
2 Press and hold down EXECUTE, and then enter your TV's code number(s) using the number buttons. Press the ENTER button. Then release EXECUTE.
Code numbers are listed below.
Now you can use the buttons marked with a dot (•) to control your TV. To control the VCR, reset TV/VTR to VTR.

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number	Manufacturer	Code number
Sony	1	Philco	3, 4
Akai	4	Philips	8
AOC	4	Pioneer	16
Centurion	12	Portland	3
Coronado	3	Quasar	6
Curtis-Mathes	12	Radio Shack	5, 14
Daytron	12	RCA	4, 10
Fisher	11	Sampo	12
General Electric	6, 10	Sanyo	11
Hitachi	2, 3	Scott	12
J. C. Penney	4, 12	Sears	7, 10, 11
JVC	9	Sharp	3, 5, 18
KMC	3	Sylvania	8, 12
Magnavox	3, 8, 12	Teknika	3, 8, 14
Marantz	4, 13	Toshiba	7
MGA/Mitsubishi	4, 12, 13, 17	Wards	3, 4, 12
NEC	4, 12	Yorx	12
Panasonic	6	Zenith	15

1-3

Step 3: Hookups

Selecting the best hookup option

Before you can use your VCR for the first time, you need to connect it to your TV and set it up to receive programs for viewing and recording. This section explains how to hook up and set up your VCR so that you can start enjoying it right away. There are, however, many types of TVs available and many ways in which your TV can be hooked up. For these reasons, this manual describes several ways your VCR can be connected.

To hook up your VCR so that it works best for you, first scan through the table below. Then use the accompanying diagrams and procedures on the following pages to set up your VCR.

If you have	Use	Refer to
TV that has audio/video inputs	Audio/video (A/V) hookup, then follow one of the hookups below.	Page 9
Cable TV with cable box	Hookup 1	Page 10
Cable TV, without cable box	Hookup 2	Page 12
Antenna only, no cable TV	Hookup 3	Page 14

After you've completed the connections, follow the instructions for setup including VCR Plus+ setup. During setup, if you need more details of the procedure described, page numbers are provided where you can find complete, step-by-step instructions.

After you've completed the setup, you're ready to use your VCR. Procedures differ depending on the hookup you used. For an overview, refer to "Quick reference to using the VCR" on the back cover.

Before you get started

- Turn off the power to all equipment.
- Do not connect the AC power cords until all of the connections are completed.
- Be sure you make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, see your nearest Sony dealer or qualified technician.

Caution

Connections between the VCR's VHF/UHF connector and the antenna terminals of the TV receiver should be made only as shown in the following instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the VCR to an antenna or make simultaneous (parallel) antenna and VCR connections at the antenna terminals of your receiver.

Note to CATV system installer

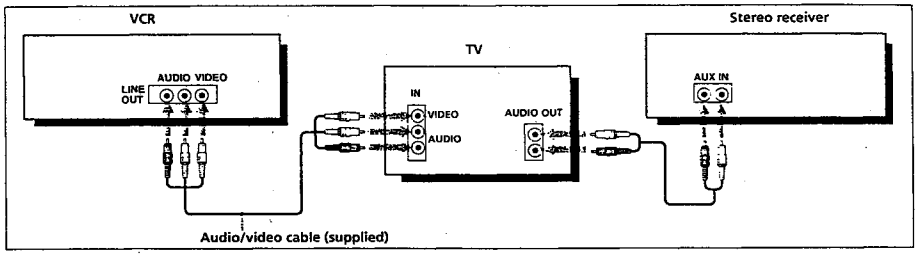
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Audio/video (A/V) hookup

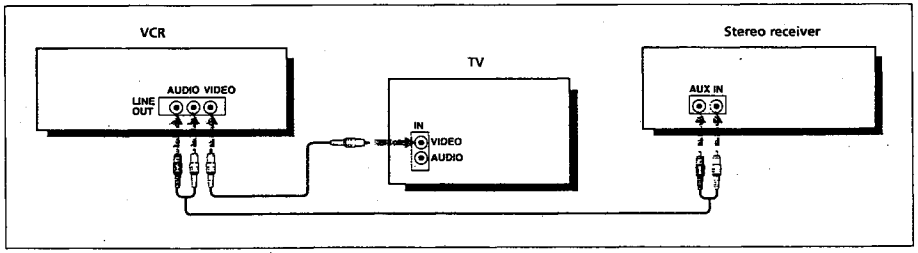
If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system. If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookups.

If you're planning to use your VCR only to play back pictures and movies, you're finished setting up the VCR after you've made these connections. If you want to record off-air or off your cable TV system, complete these connections first, and then go to the following pages for antenna or cable hookups.

A Use this hookup if your TV has stereo jacks

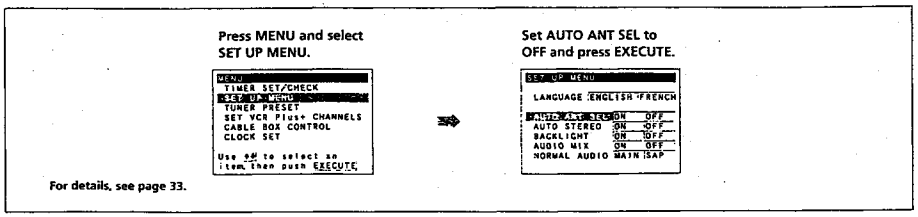


B Use this hookup if your TV doesn't have stereo jacks



A/V hookup: VCR setup

After you've connected your TV and completed antenna or cable hookup, use the following procedure to set up the VCR.



For details, see page 33.

Hookup 1

Using cable box control

Recommended use

This hookup is recommended for most cable systems with cable boxes. It allows the VCR's cable box control feature to control the channel on the cable box, simplifying the recording process. You should use this hookup if you have a cable box, especially if your cable system scrambles all or most channels. A list of compatible cable boxes is on page **28**.

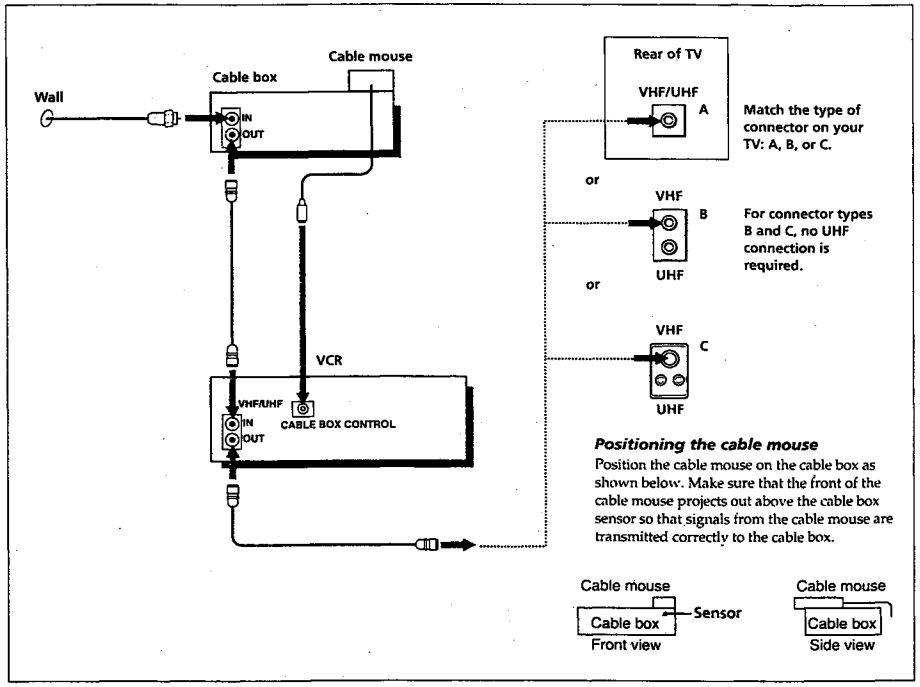
What you can and can't do with this hookup

What you can do

- Record any channel by using the VCR's cable box control feature to select channels on the cable box

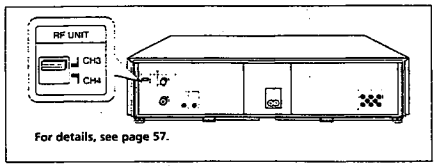
What you can't do

- Record with the cable box turned off
- Record one channel while watching another channel



Hookup 1: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **9**), you can skip this step.

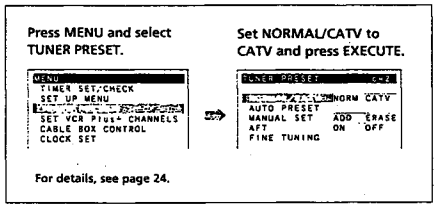


For details, see page 57.

2 *(Canadian model only)* Set the on-screen display language to French if desired. For details, see page **21**.

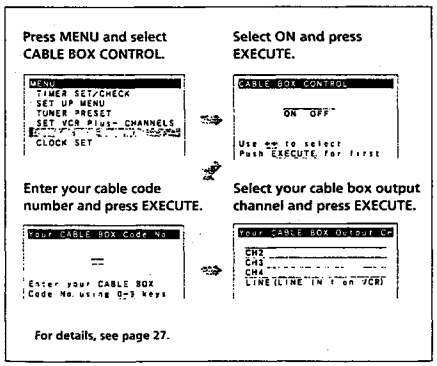
3 Turn on your cable box.

4 Set NORMAL/CATV to CATV:



For details, see page 24.

5 Set CABLE BOX CONTROL to ON:


Press MENU and select CABLE BOX CONTROL.
Select ON and press EXECUTE.
MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
SET VCR Plus+ CHANNELS
CLOCK SET
CABLE BOX CONTROL
ON OFF
Enter your cable code number and press EXECUTE.
Select your cable box output channel and press EXECUTE.
Your CABLE BOX Code No.
Enter your CABLE BOX Code No. using 0-9 keys
Your CABLE BOX Output CH
CH2
CH3
CH4
LINE (LINE IN 1 on VCR)

For details, see page 27.

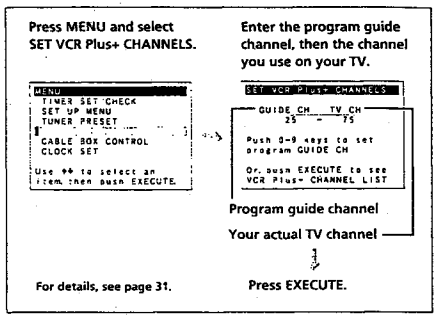
If your cable box is not compatible

Check with your cable company to see if they can provide a compatible box. If not, use Hookup 2 (or 5, if you have only a few scrambled channels) or Hookup 4 (if you have many scrambled channels).

Hookup 1: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:


Press MENU and select SET VCR Plus+ CHANNELS.
Enter the program guide channel, then the channel you use on your TV.
MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
CABLE BOX CONTROL
CLOCK SET
Use ↑↓ to select an item, then push EXECUTE.
SET VCR Plus+ CHANNELS
GUIDE CH
TV CH
25
75
Push 0-9 keys to set program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST
Program guide channel
Your actual TV channel
Press EXECUTE.

For details, see page 31.

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks if the clock displays the current time. If not, it adjusts the clock automatically. Make sure to leave the cable box on.

The VCR sets the clock by picking up a time signal that's provided by some TV channels. With the automatic clock setting feature you don't have to set the clock or even adjust to Daylight Saving Time.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages **22**–**23**.

You are now ready to use your VCR

A **Quick reference** to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 1) so that you can always follow the correct instructions.

Hookup 2

No cable box or Incompatible cable box and few scrambled channels

Recommended use

Use this hookup if you do not have a cable box. Also use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles only a few channels.

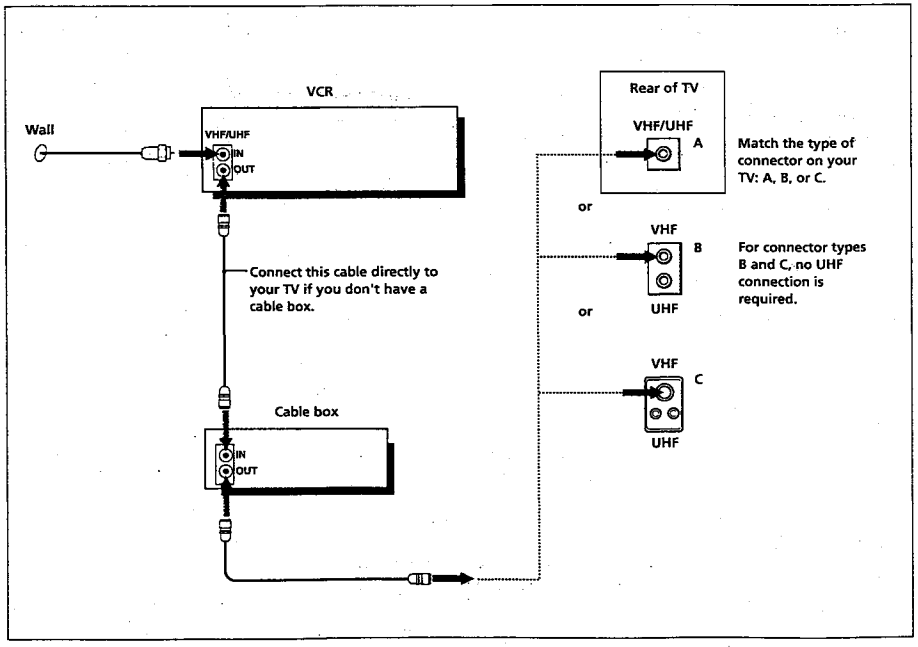
What you can and can't do with this hookup

What you can do

- Record any unscrambled channel

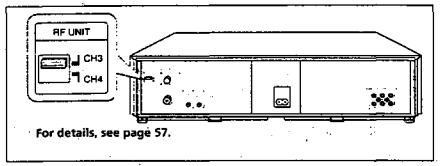
What you can't do

- Record scrambled channels that require a cable box



Hookup 2: VCR setup

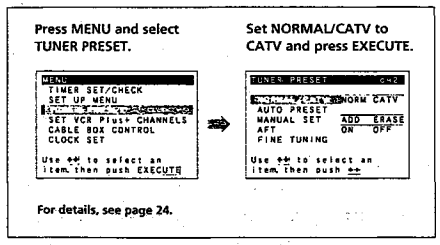
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **9**), you can skip this step.



For details, see page 57.

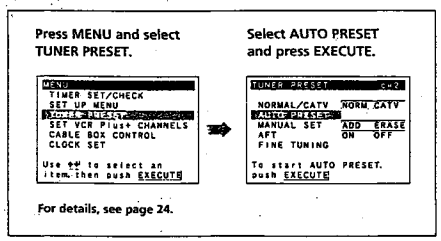
2 *(Canadian model only)* Set the on-screen display language to French if desired. For details, see page **21**.

3 Set NORMAL/CATV to CATV:



For details, see page 24.

4 Preset the channels into the VCR:

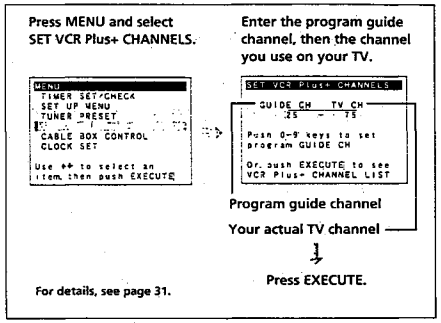


For details, see page 24.

Hookup 2: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:


Press MENU and select SET VCR Plus+ CHANNELS.
Enter the program guide channel, then the channel you use on your TV.
MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
CABLE BOX CONTROL
CLOCK SET
Use ↑↓ to select an item, then push EXECUTE
SET VCR Plus+ CHANNELS
GUIDE CH TV CH
Push 0-9 keys to set program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST
Program guide channel
Your actual TV channel
Press EXECUTE.

For details, see page 31.

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks if the clock displays the current time. If not, it adjusts the clock automatically.

The VCR sets the clock by picking up a time signal that's provided by some TV channels. With the automatic clock setting feature you don't have to set the clock or even adjust to Daylight Saving Time.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages **22–23**.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 2) so that you can always follow the correct instructions.

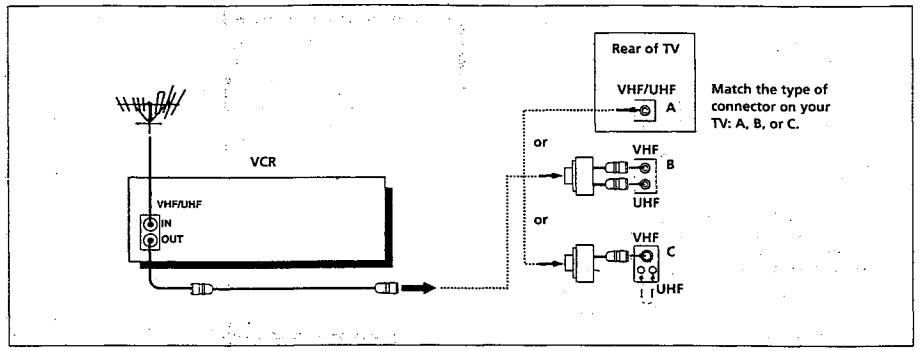
Hookup 3

Make the following connections if you're using an antenna (if you don't have cable TV).

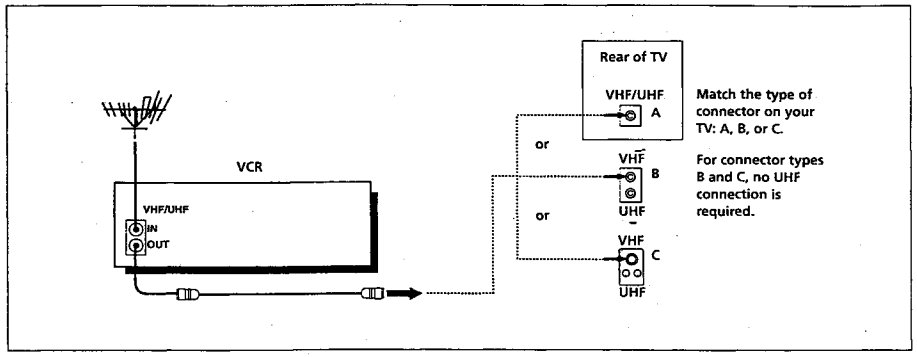
Antenna hookup

A Use this hookup if you're using:

- VHF/UHF antenna (you get channels 2-13 and channels 14 and higher)
- UHF-only antenna (you get channels 14 and higher)
- separate VHF and UHF antennas



B Use this hookup if you're using a VHF-only antenna (you get channels 2-13 only)

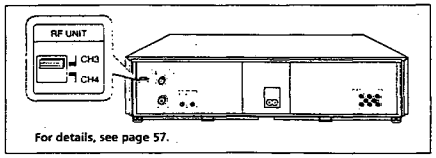


If you cannot connect your antenna cable to the VCR directly

If your antenna cable is a flat cable (300-ohm twin lead cable), attach the external antenna connector (not supplied) so that you can connect the cable to the VHF/UHF IN jack. If you have separate cables for VHF and UHF antennas, you may use a U/V band mixer. For details, see page **57**.

Hookup 3: VCR setup

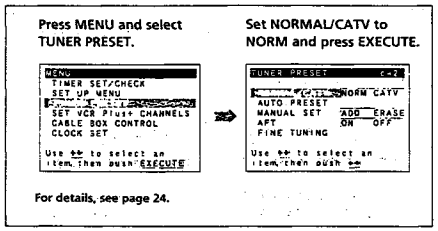
1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **9**), you can skip this step.



For details, see page 57.

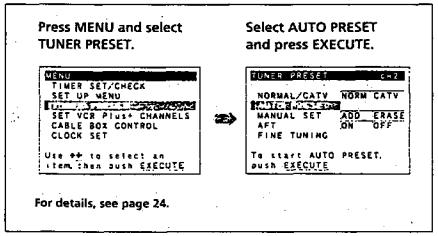
2 *(Canadian model only)* Set the on-screen display language to French if desired. For details, see page **21**.

3 Set NORMAL/CATV to NORM:



For details, see page 24.

4 Preset the channels into the VCR:

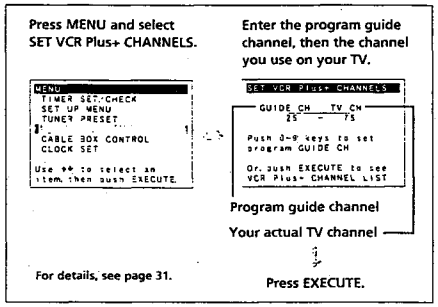


For details, see page 24.

Hookup 3: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:


Press MENU and select SET VCR Plus+ CHANNELS.
Enter the program guide channel, then the channel you use on your TV.
MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
CABLE BOX CONTROL
CLOCK SET
Use ↑↓ to select an item, then push EXECUTE.
SET VCR Plus+ CHANNELS
GUIDE CH TV CH
Push 0-9 keys to set program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST
Program guide channel
Your actual TV channel
Press EXECUTE.

For details, see page 31.

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks if the clock displays the current time. If not, it adjusts the clock automatically.

The VCR sets the clock by picking up a time signal that's provided by some TV channels. With the automatic clock setting feature you don't have to set the clock or even adjust to Daylight Saving Time.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages **22-23**.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 3) so that you can always follow the correct instructions.

1-7

Hookup 4

Incompatible cable box and many scrambled channels

Recommended use

Use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles all, or most channels.

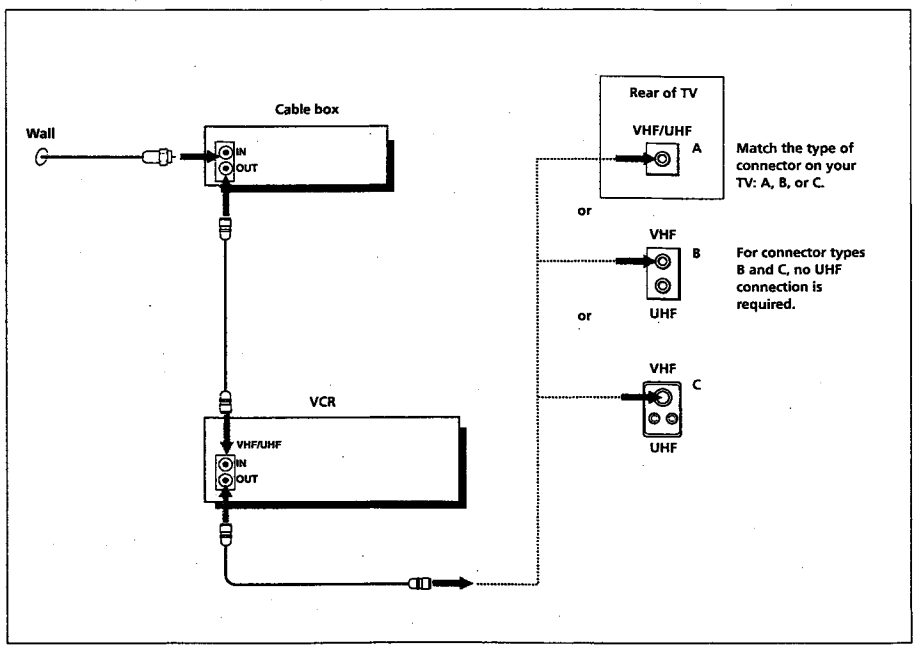
What you can and can't do with this hookup

What you can do

- Record any channel by selecting the channel on the cable box

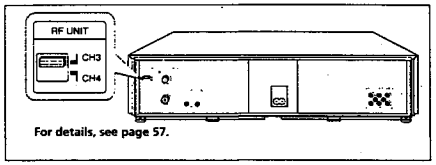
What you can't do

- Record with the cable box turned off
- Record by selecting channels directly with the VCR
- Record one channel while watching another channel



Hookup 4: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page **9**), you can skip this step.



For details, see page 57.

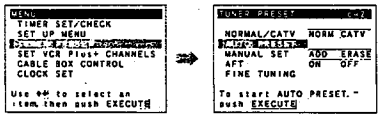
2 *(Canadian model only)* Set the on-screen display language to French if desired. For details, see page **21**.

3 Turn on your cable box.

4 Preset the channels into the VCR:

Press MENU and select TUNER PRESET.

Select AUTO PRESET and press EXECUTE.



For details, see page 24.

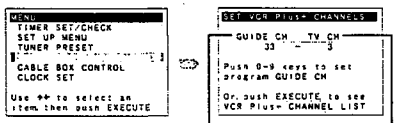
Hookup 4: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page **30**.

2 Enter all the channels you want to record and the cable box output channel (usually 2, 3, or 4):

Press MENU and select SET VCR Plus+ CHANNELS.

Enter the program guide channel, then the cable box output channel.



Program guide channel

Your cable box output channel

For details, see page 31.

Press EXECUTE.

You are now ready to use your VCR

A Quick reference to operations is provided on the back cover to help you quickly enjoy the basic functions. These procedures differ slightly depending on the hookup used. Make a note of which hookup you used (Hookup 4) so that you can always follow the correct instructions.

Hookup 5

Incompatible cable box with few scrambled channels, using an A/B switch

Recommended use

By using an A/B switch, this hookup allows you to easily record both scrambled and unscrambled channels. With the A/B switch set to position "A," you can record unscrambled channels by selecting channels directly with the VCR. You only use position "B" and the cable box to record a scrambled channel.

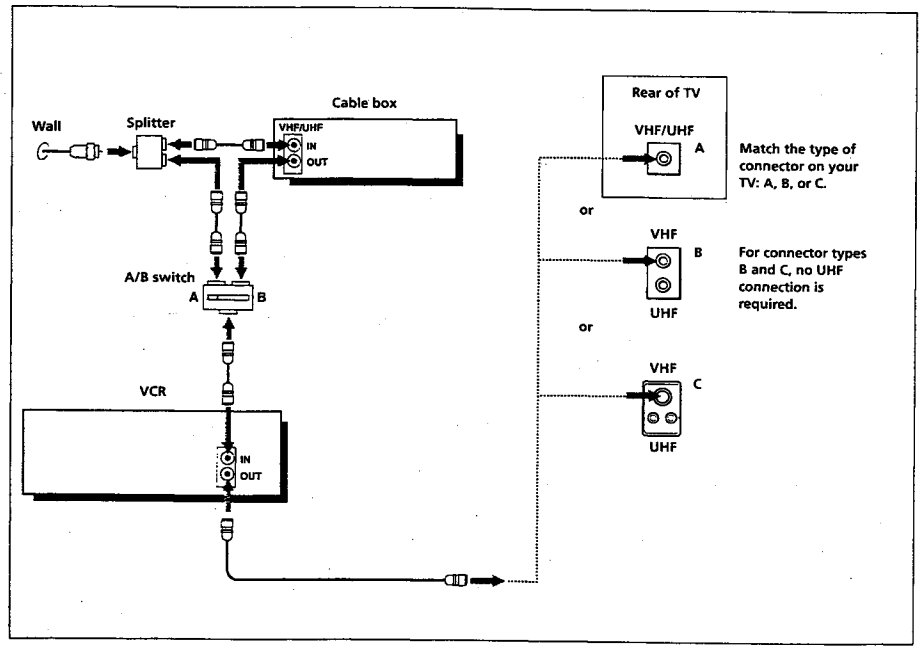
What you can and can't do with this hookup

What you can do

- Record any unscrambled channel by selecting the channel directly with your VCR (the A/B switch is set to "A")
- Record any scrambled channel by selecting the channel on the cable box (the A/B switch is set to "B")

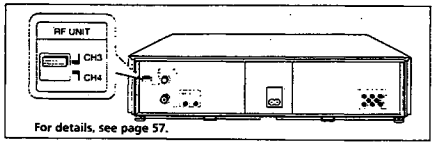
What you can't do

- Record one channel while watching another channel



Hookup 5: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.
If you made A/V connections (from page 9), you can skip this step.



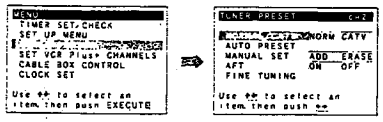
For details, see page 57.

2 *(Canadian model only)* Set the on-screen display language to French if desired. For details, see page 21.

3 Set the A/B switch to "A."

4 Set NORMAL/CATV to CATV:

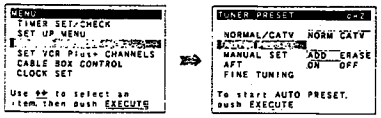
Press MENU and select TUNER PRESET. Set NORMAL/CATV to CATV and press EXECUTE.



For details, see page 24.

5 Preset the channels into the VCR:

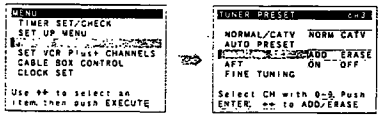
Press MENU and select TUNER PRESET. Select AUTO PRESET and press EXECUTE.



For details, see page 24.

6 Preset the cable box output channel (usually 2, 3, or 4):

Press MENU and select TUNER PRESET. Set MANUAL SET to ADD and press EXECUTE.



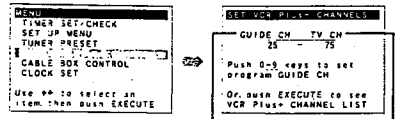
For details, see page 25.

Hookup 5: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details on the VCR Plus+ Channel Listing, see page 30.

2 For unscrambled channels, if the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows:

Press MENU and select SET VCR Plus+ CHANNELS. Enter the program guide channel, then the channel you use on your TV.


MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
CABLE BOX CONTROL
CLOCK SET
Use ↑↓ to select an item, then push EXECUTE
SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 75
Push 0–9 keys to set program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST

Program guide channel

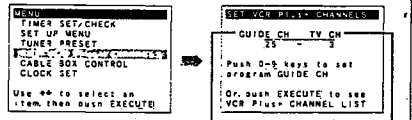
Your actual TV channel

For details, see page 31.

Press EXECUTE.

3 For scrambled channels, enter all the scrambled channels you want to record and the cable box output channel (usually 2, 3, or 4):

Press MENU and select SET VCR Plus+ CHANNELS. Enter the program guide channel, then the cable box output channel.


MENU
TIMER SET/CHECK
SET UP MENU
TUNER PRESET
CABLE BOX CONTROL
CLOCK SET
Use ↑↓ to select an item, then push EXECUTE
SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 3
Push 0–9 keys to set program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST

Program guide channel

Your cable box output channel

For details, see page 31.

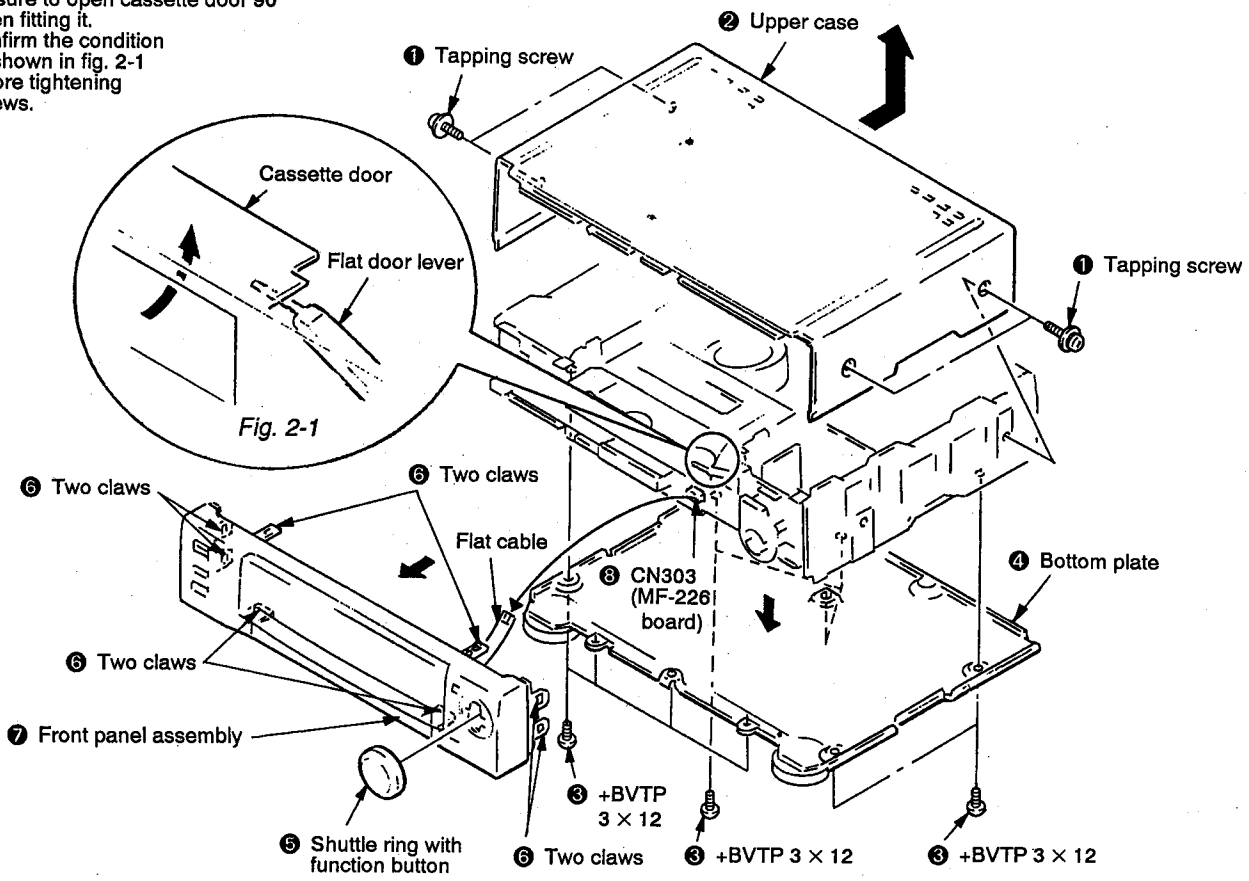
Press EXECUTE.

SECTION 2
DISASSEMBLY

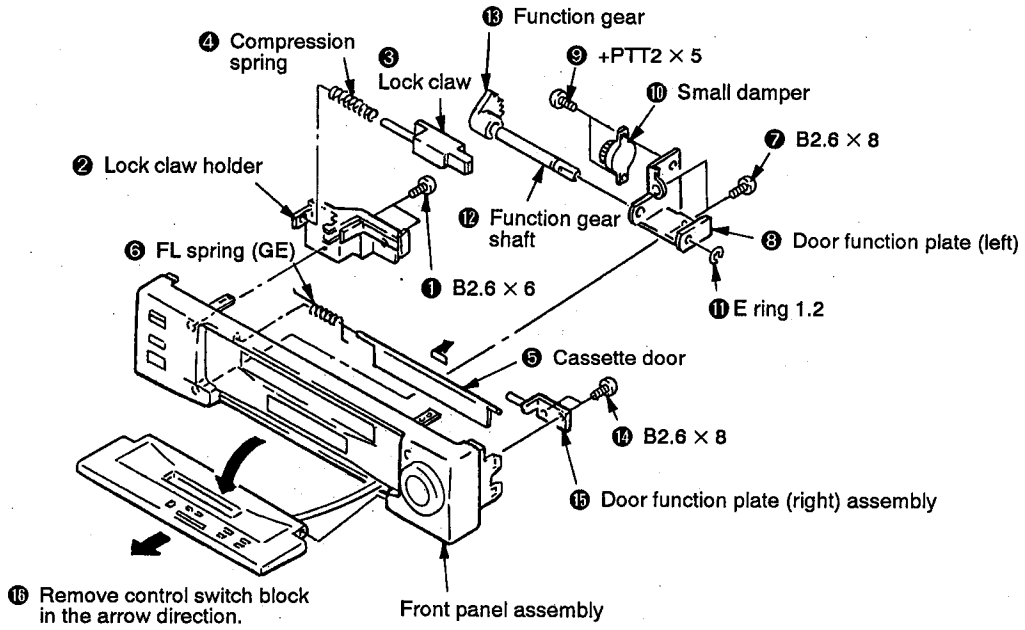
Note: Follow the disassembly procedure in the numerical order given.

2-1. FRONT PANEL ASSEMBLY AND CASE

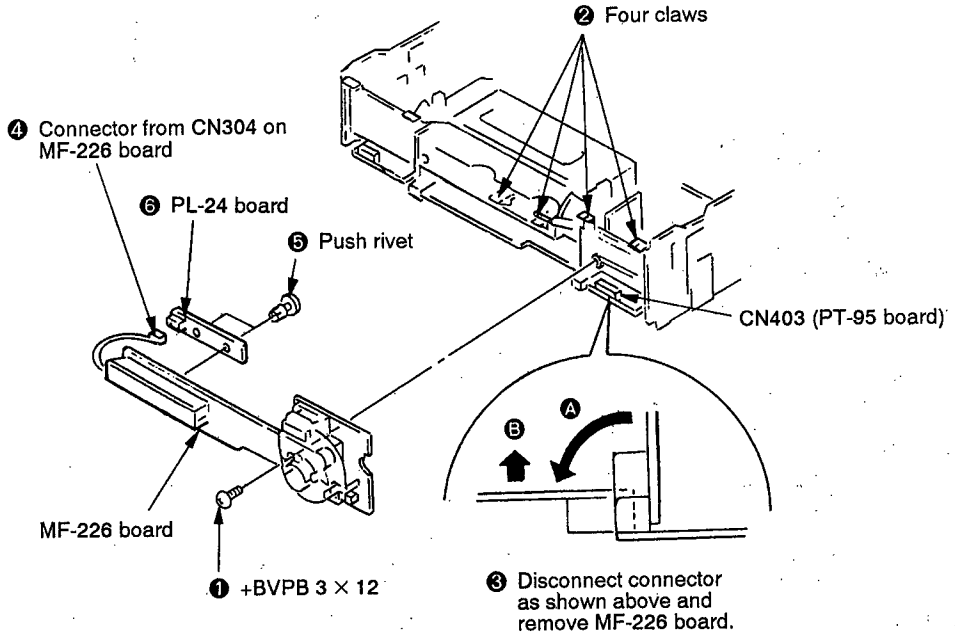
* Note on fitting front panel assembly
  Be sure to open cassette door 90° when fitting it.
* Confirm the condition as shown in fig. 2-1 before tightening screws.



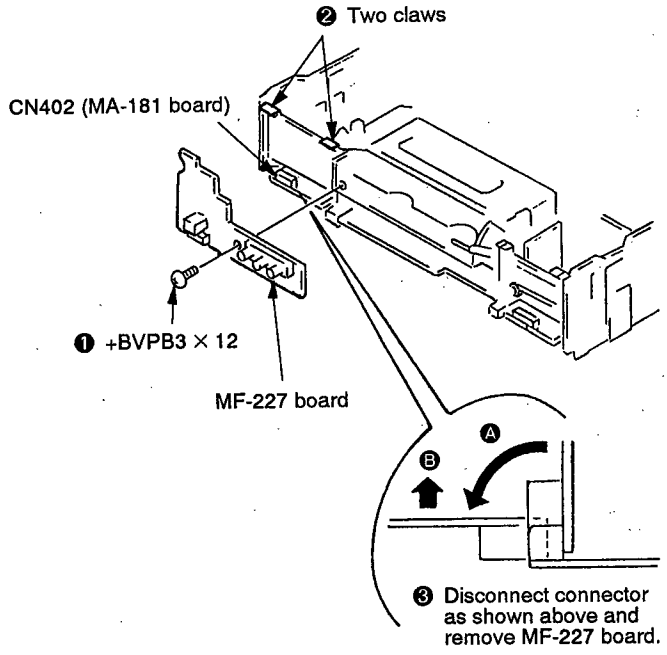
2-2. CONTROL SWITCH BLOCK


⓭ Function gear
❹ Compression spring
❸ Lock claw
❾ +PTT2 × 5
❿ Small damper
❼ B2.6 × 8
❷ Lock claw holder
⓬ Function gear shaft
❽ Door function plate (left)
❻ FL spring (GE)
❶ B2.6 × 6
⓫ E ring 1.2
❺ Cassette door
⓮ B2.6 × 8
⓯ Door function plate (right) assembly
⓰ Remove control switch block in the arrow direction.
Front panel assembly

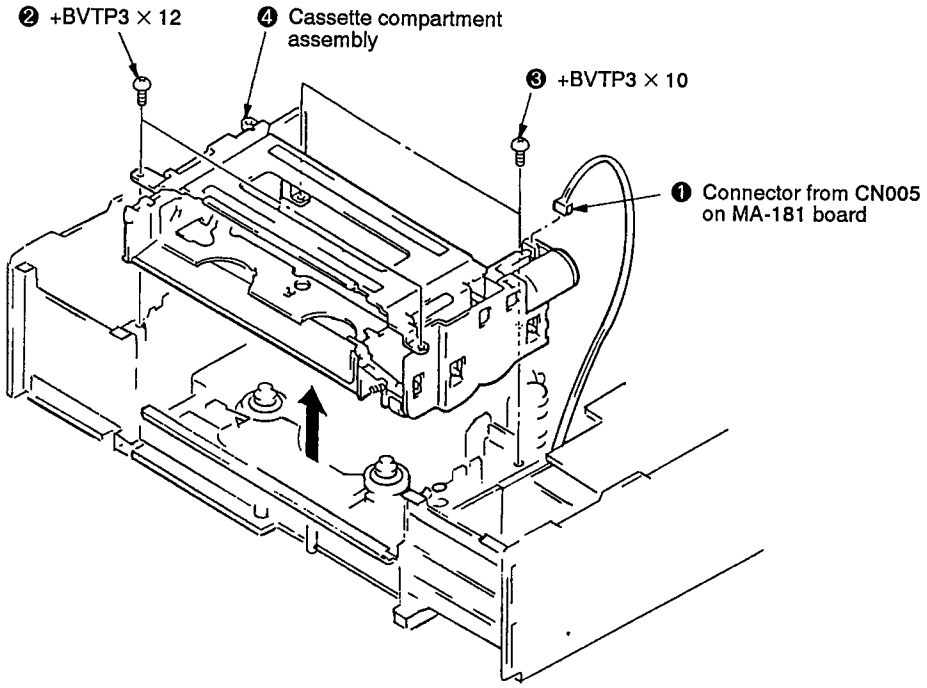
2-3. MF-226 AND PL-24 BOARDS



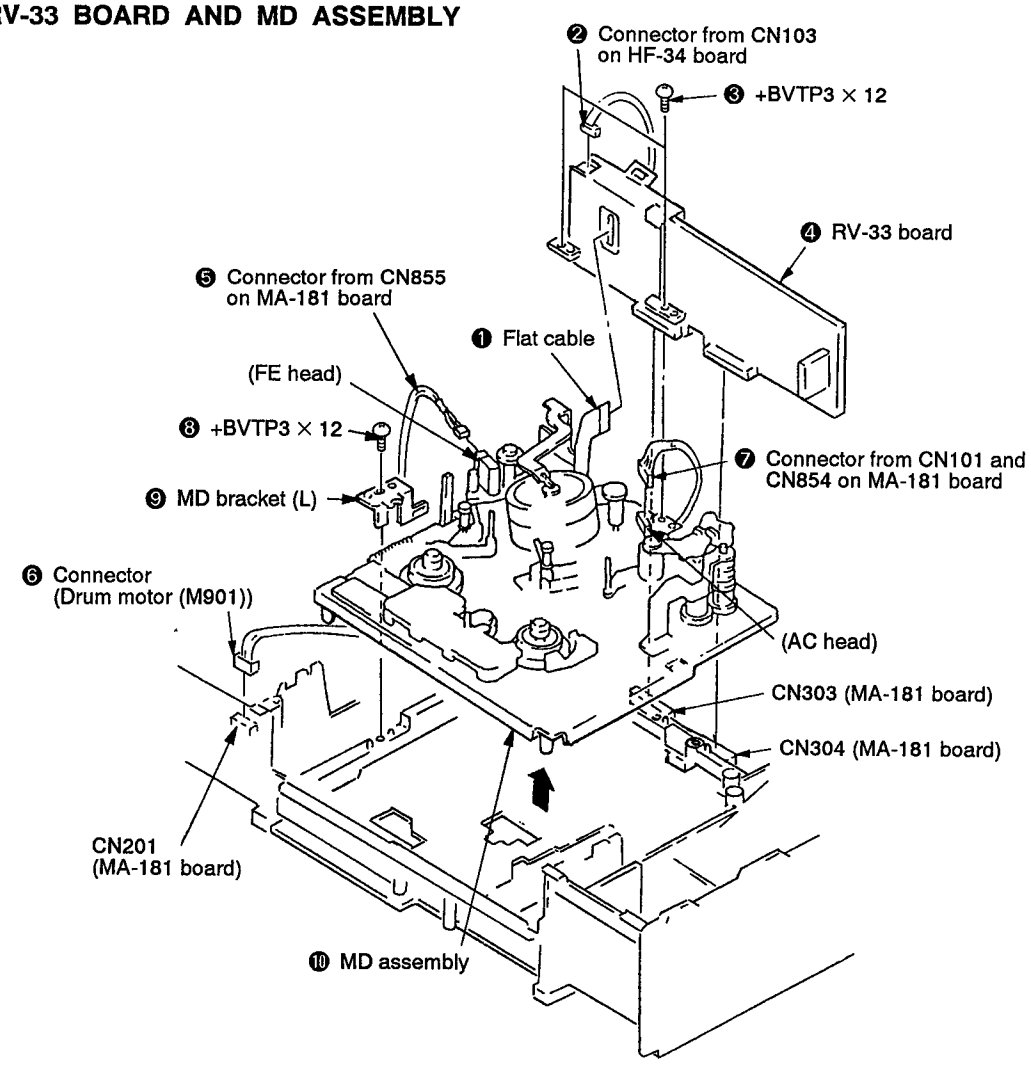
2-4. MF-227 BOARD



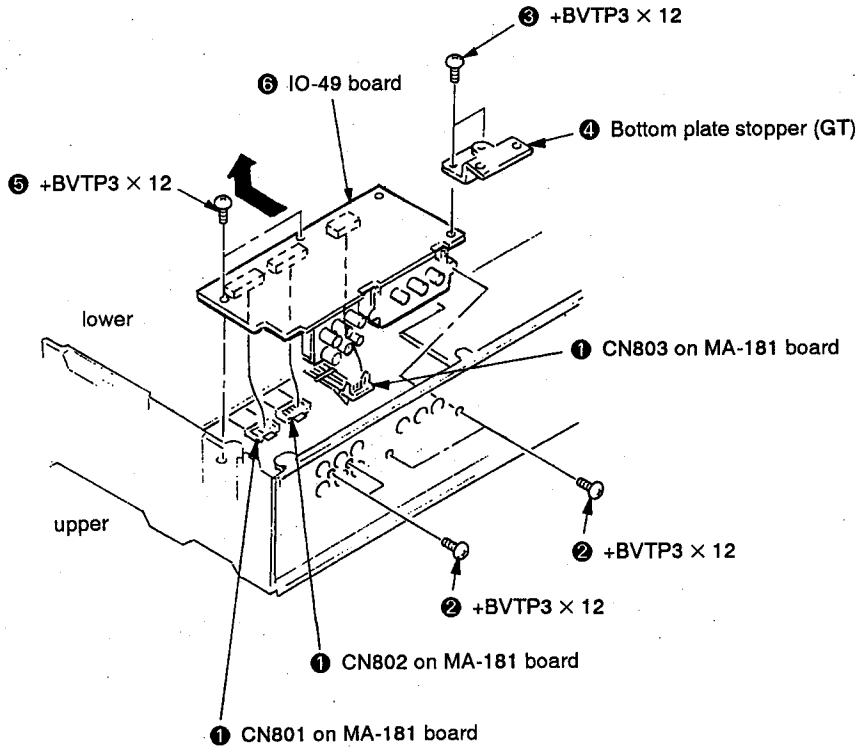
2-5. CASSETTE COMPARTMENT ASSEMBLY



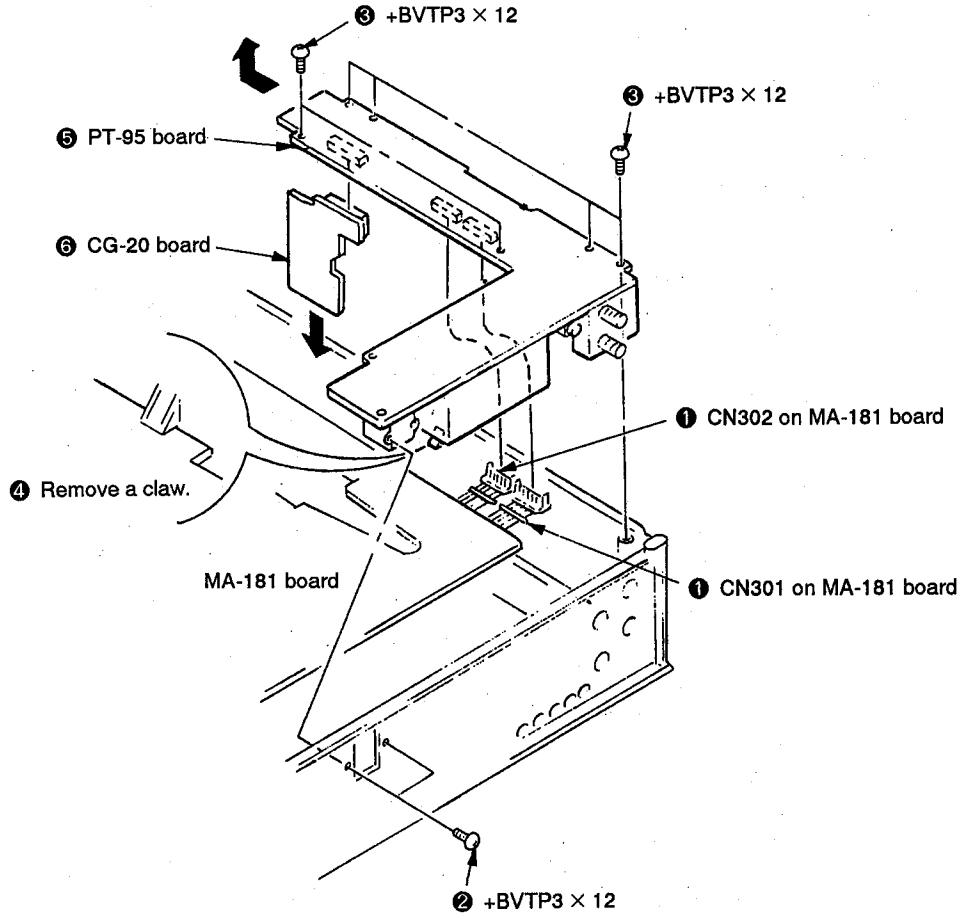
2-6. RV-33 BOARD AND MD ASSEMBLY


❷ Connector from CN103 on HF-34 board
❸ +BVTP3 × 12
❹ RV-33 board
❺ Connector from CN855 on MA-181 board
❶ Flat cable
(FE head)
❽ +BVTP3 × 12
❼ Connector from CN101 and CN854 on MA-181 board
❾ MD bracket (L)
❻ Connector (Drum motor (M901))
(AC head)
CN303 (MA-181 board)
CN304 (MA-181 board)
CN201 (MA-181 board)
❿ MD assembly

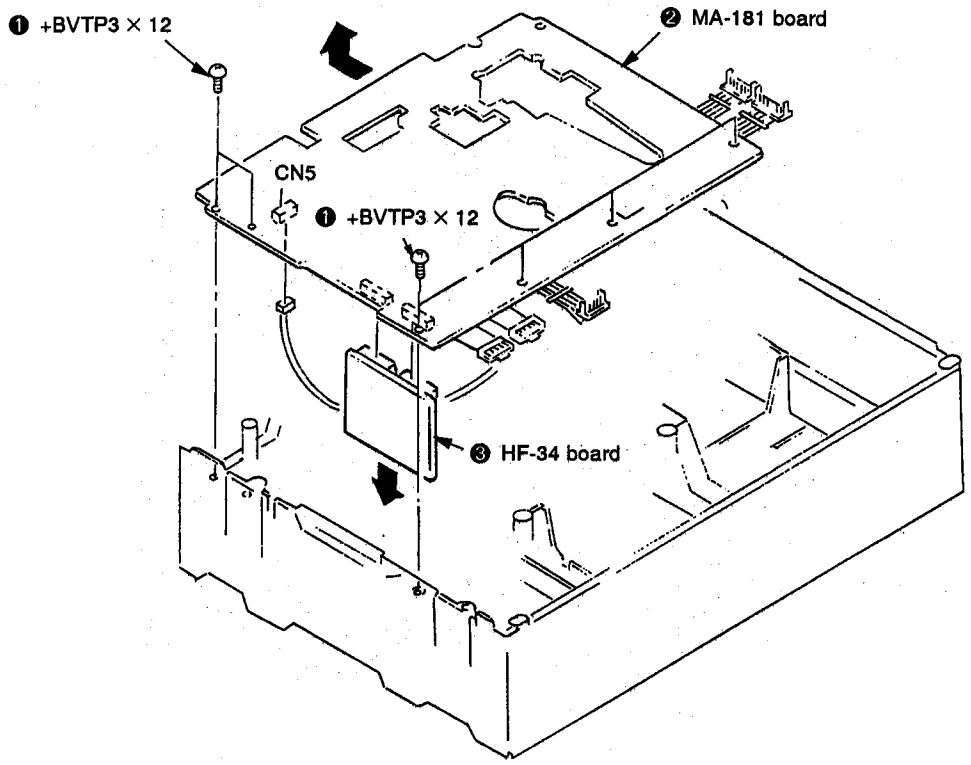
2-7. IO-49 BOARD



2-8. PT-95 AND CG-20 BOARDS

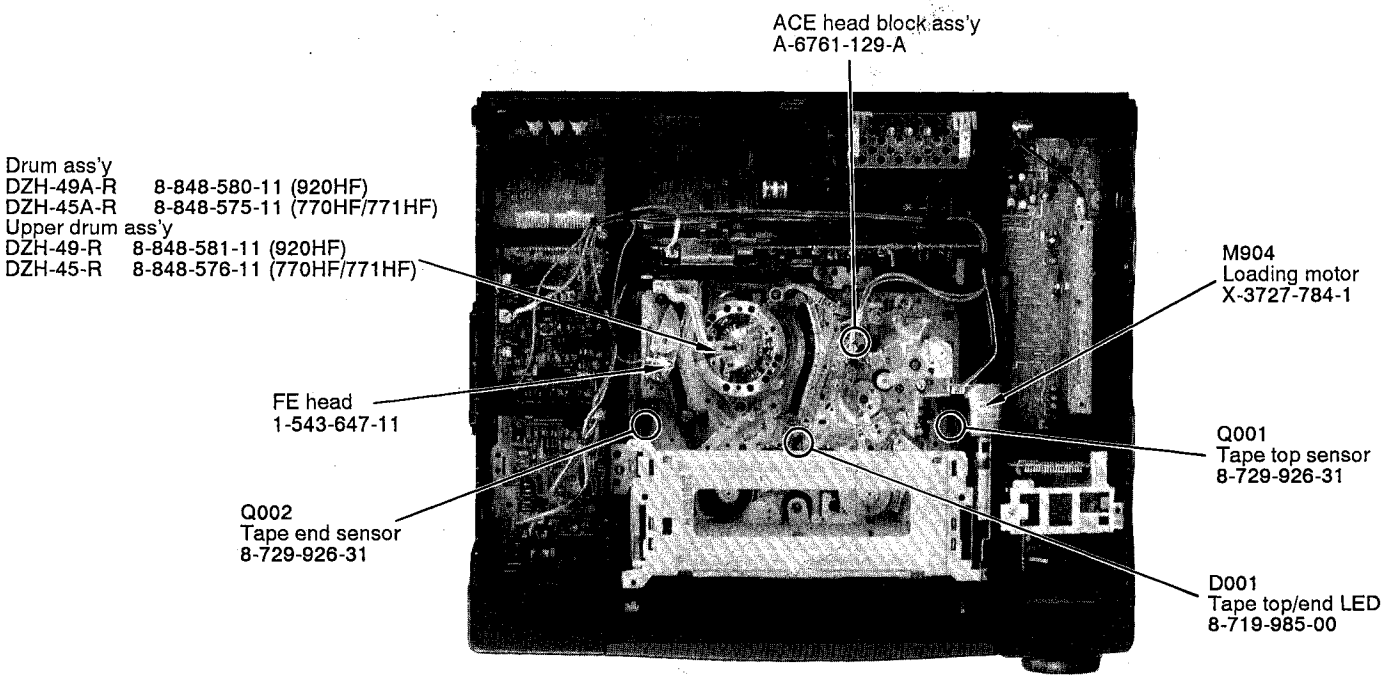


2-9. MA-181 AND HF-34 BOARDS

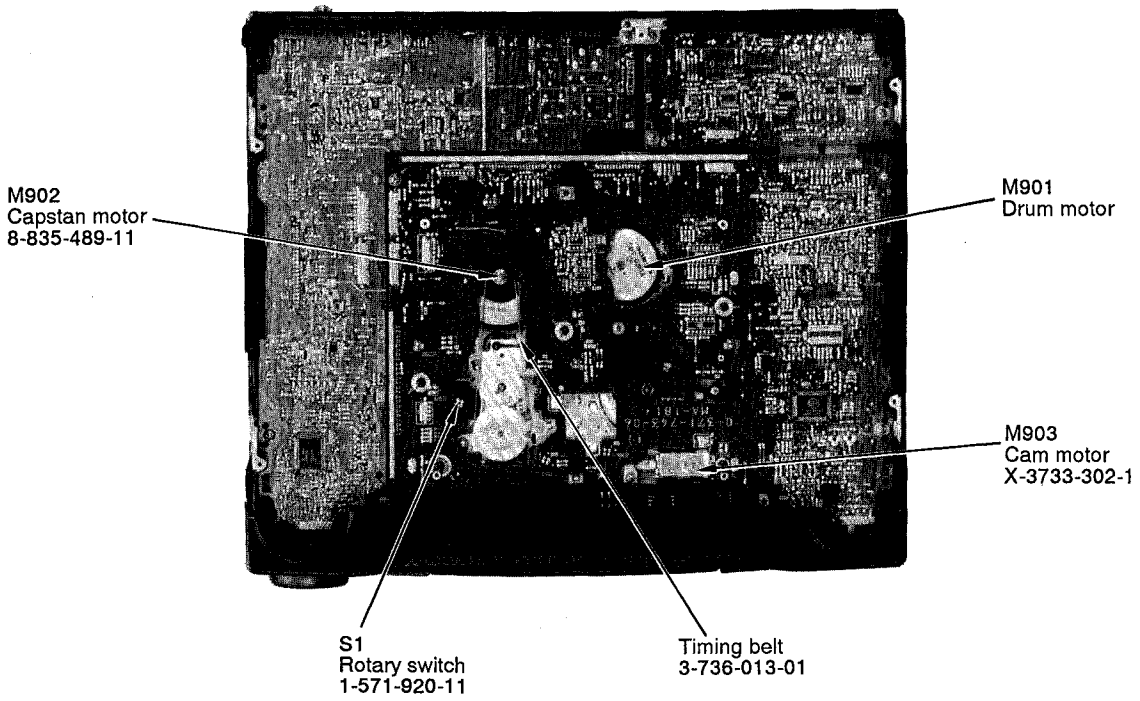


2-10. INTERNAL VIEWS

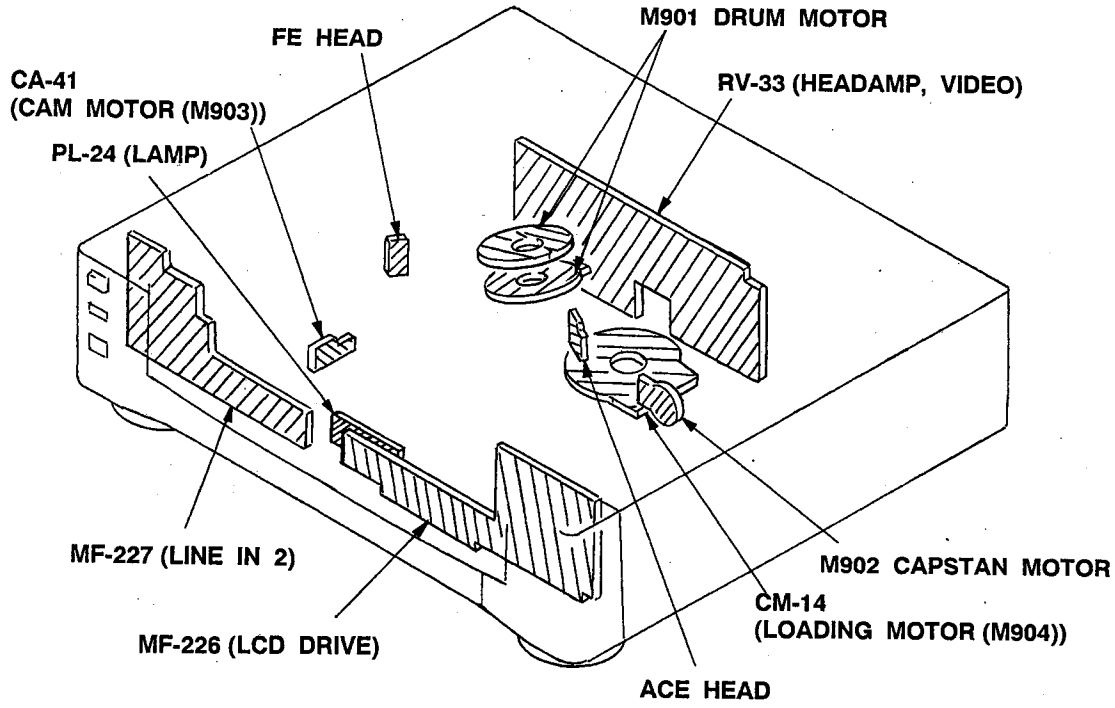
– Top Side –

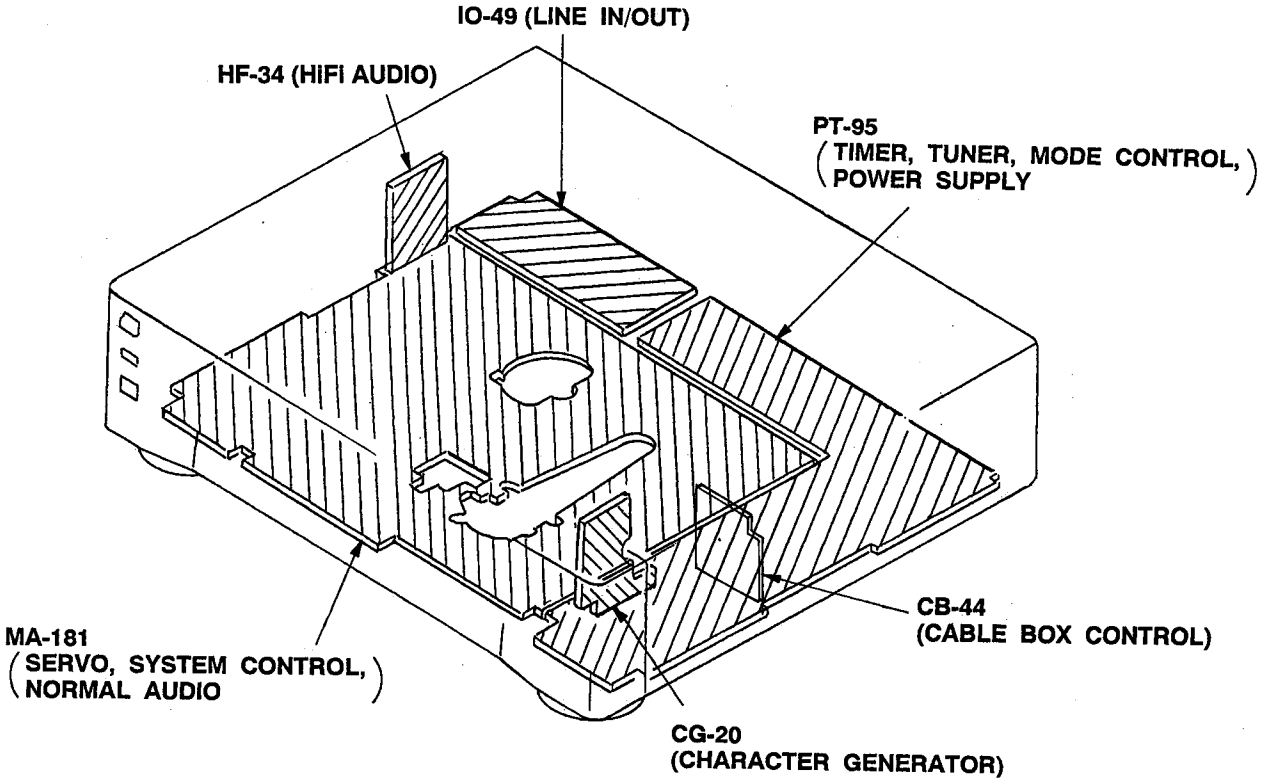


– Bottom Side –



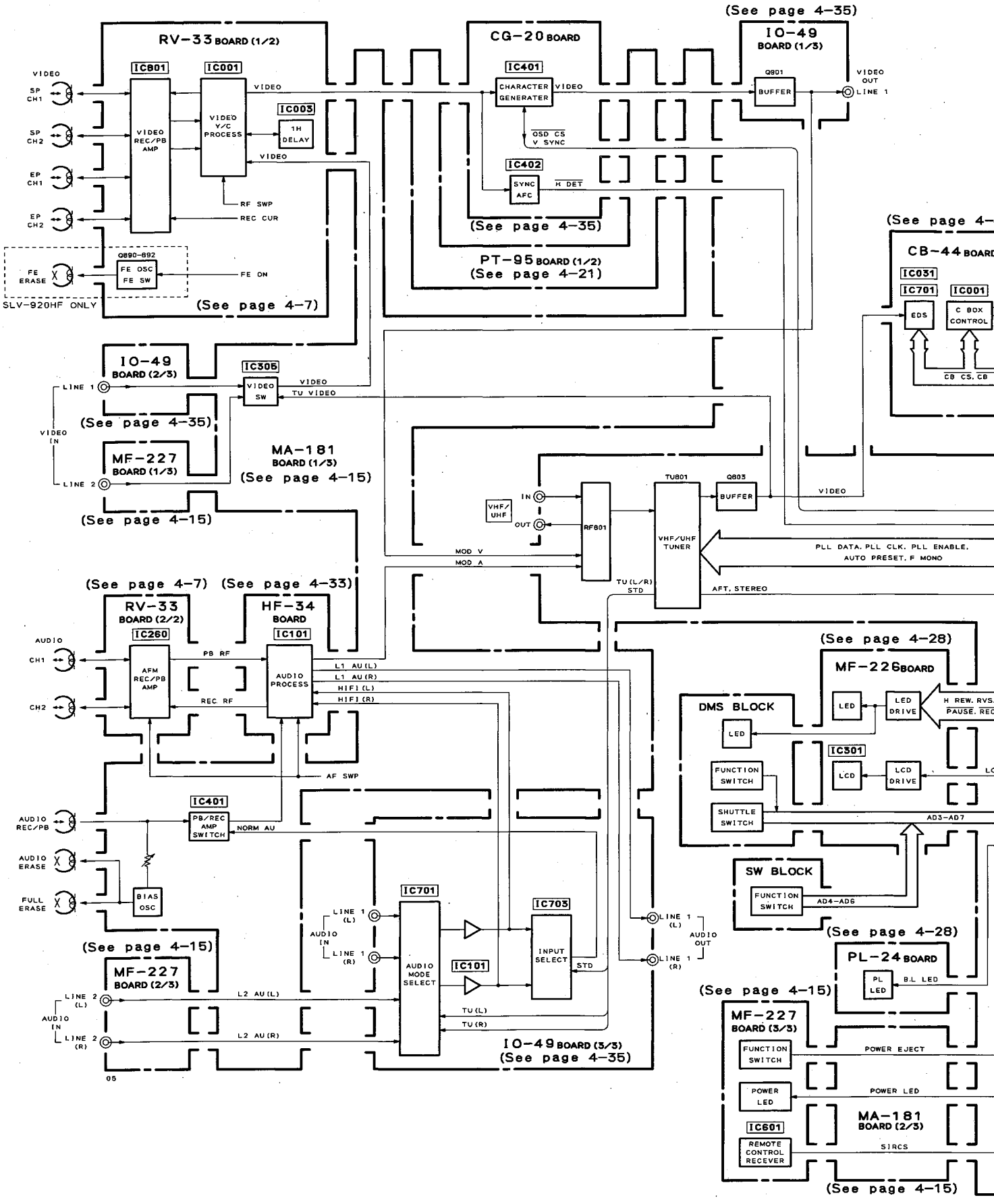
2-11. CIRCUIT BOARDS LOCATION

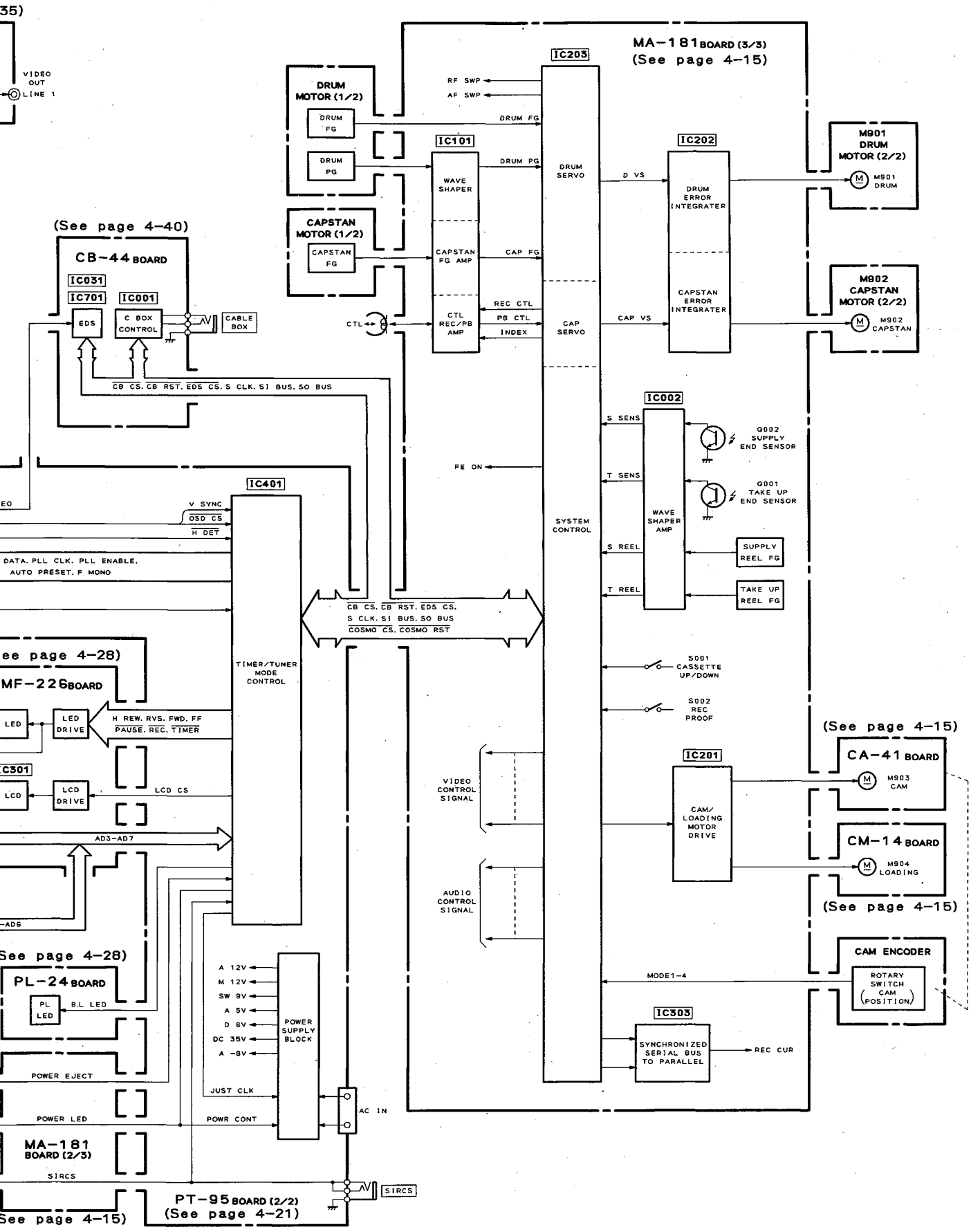




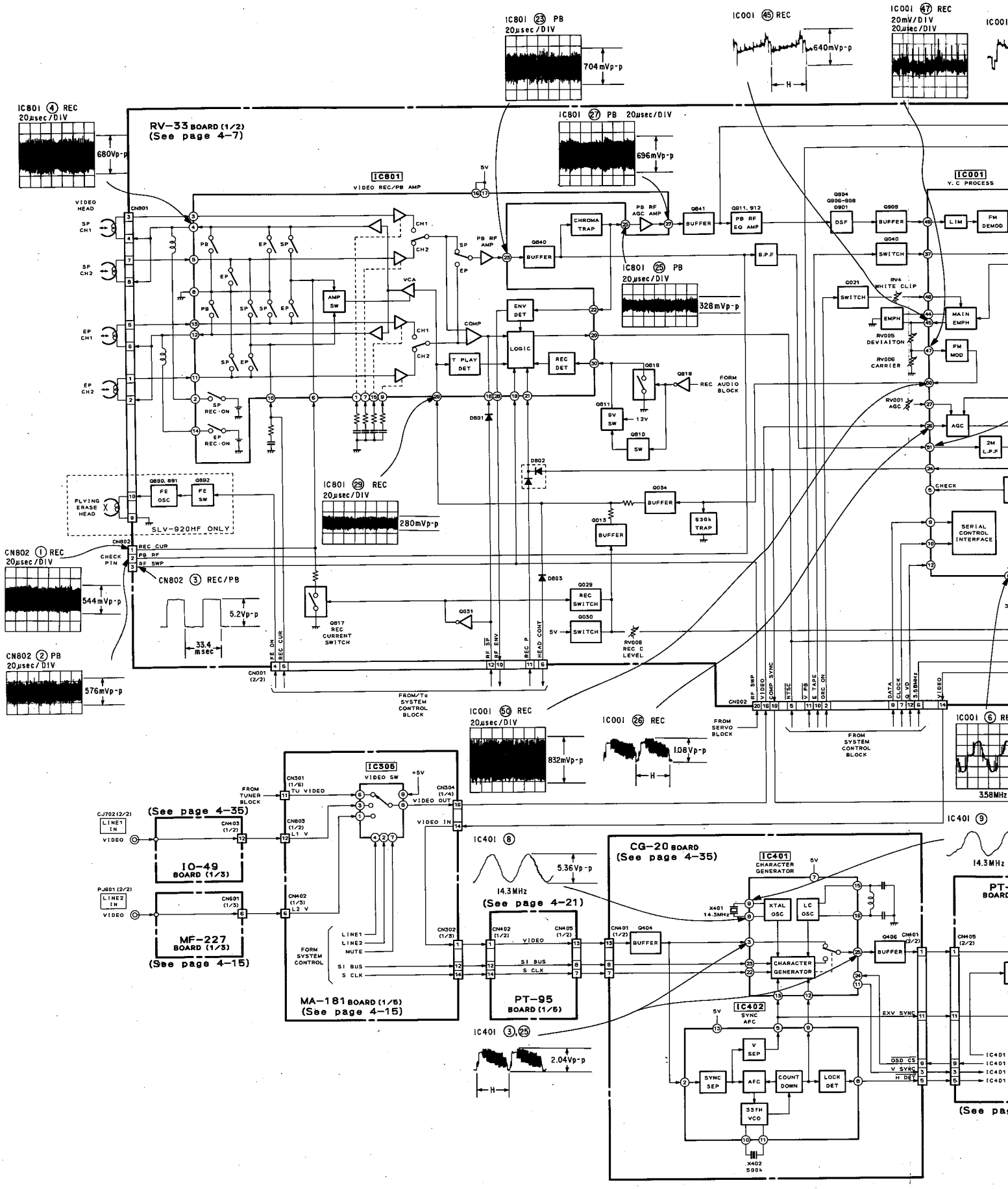
SECTION 3
BLOCK DIAGRAMS

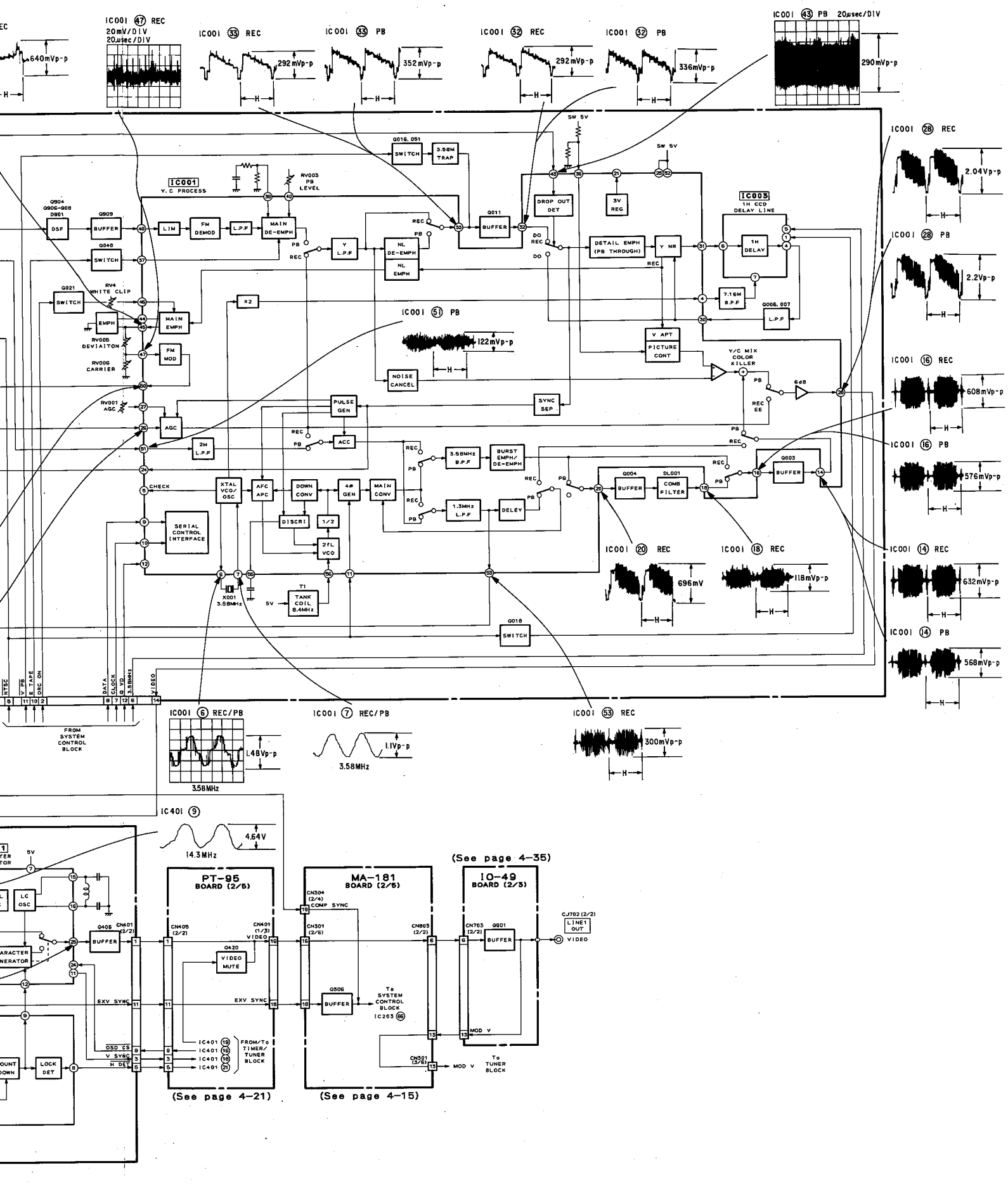
3-1. OVERALL BLOCK DIAGRAM



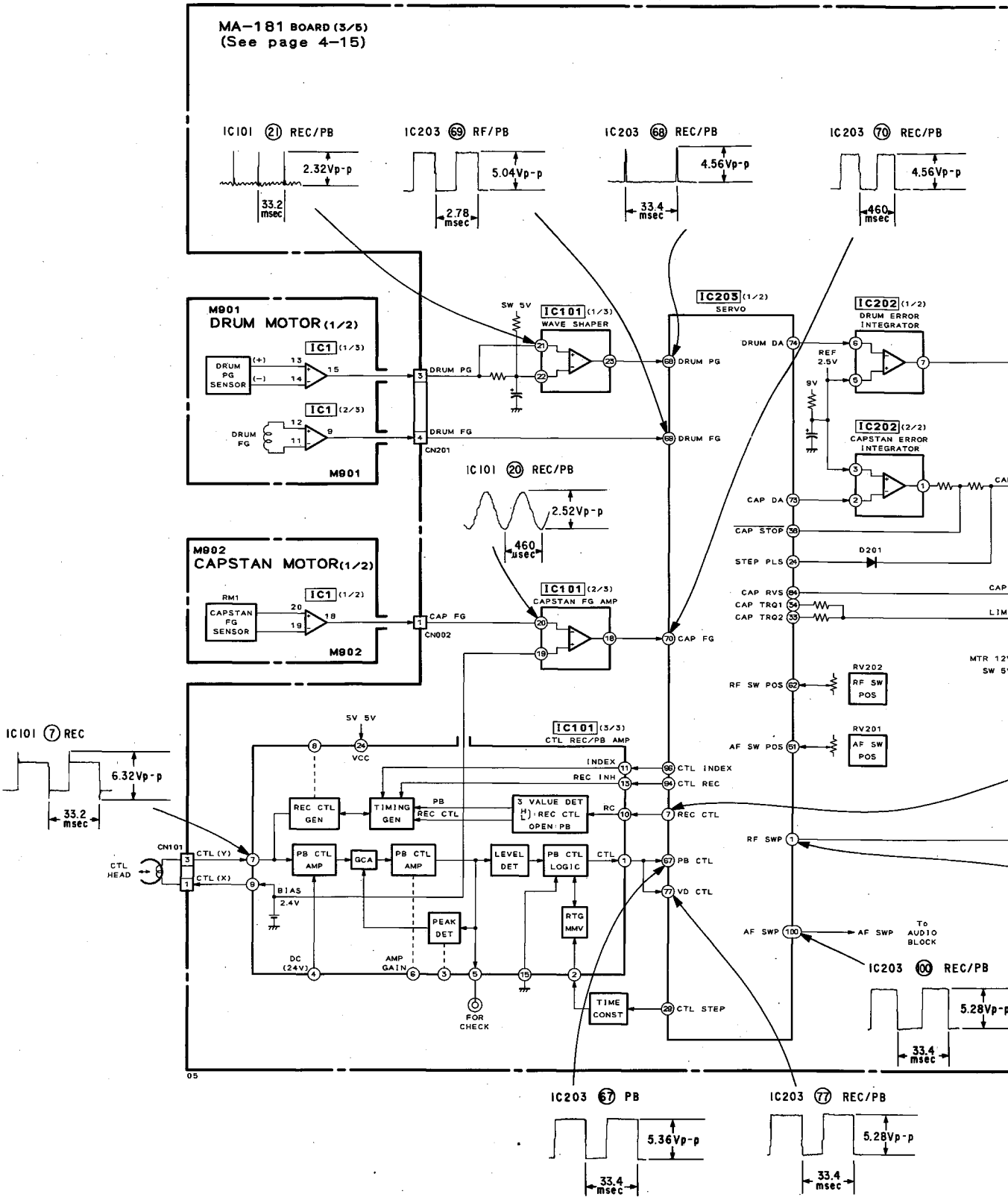

35)
VIDEO OUT LINE 1
MA-181 BOARD (3/3)
(See page 4-15)
IC203
DRUM MOTOR (1/2)
DRUM FG
DRUM PG
RF SWP
AF SWP
DRUM FG
IC101
WAVE SHAPER
DRUM PG
DRUM SERVO
D VS
IC202
DRUM ERROR INTEGRATER
M901 DRUM MOTOR (2/2)
M901 DRUM
CAPSTAN MOTOR (1/2)
CAPSTAN FG
CAPSTAN FG AMP
CAP FG
CAPSTAN ERROR INTEGRATER
M902 CAPSTAN MOTOR (2/2)
M902 CAPSTAN
(See page 4-40)
CB-44 BOARD
IC031
IC701
IC001
EDS
C BOX CONTROL
CABLE BOX
CTL
CTL REC/PB AMP
REC CTL
PB CTL
INDEX
CAP SERVO
CAP VS
CB CS, CB RST, EDS CS, S CLK, SI BUS, SO BUS
IC002
S SENS
Q002 SUPPLY END SENSOR
T SENS
Q001 TAKE UP END SENSOR
FE ON
IC401
V SYNC
OSD CS
H DET
DATA, PLL CLK, PLL ENABLE, AUTO PRESET, F MONO
WAVE SHAPER AMP
SUPPLY REEL FG
S REEL
T REEL
TAKE UP REEL FG
SYSTEM CONTROL
CB CS, CB RST, EDS CS, S CLK, SI BUS, SO BUS
COSMO CS, COSMO RST
S001 CASSETTE UP/DOWN
S002 REC PROOF
(See page 4-28)
MF-226 BOARD
LED
LED DRIVE
H REW, RVS, FWD, FF
PAUSE, REC, TIMER
TIMER/TUNER MODE CONTROL
IC301
LCD
LCD DRIVE
LCD CS
AD3-AD7
VIDEO CONTROL SIGNAL
AUDIO CONTROL SIGNAL
IC201
CAM/ LOADING MOTOR DRIVE
(See page 4-15)
CA-41 BOARD
M903 CAM
CM-14 BOARD
M904 LOADING
(See page 4-15)
CAM ENCODER
ROTARY SWITCH CAM (POSITION)
MODE1-4
See page 4-28)
PL-24 BOARD
PL LED
B.L LED
POWER EJECT
A 12V
M 12V
SW 9V
A 5V
D 6V
DC 35V
A -8V
POWER SUPPLY BLOCK
JUST CLK
AC IN
POWER LED
POWR CONT
IC303
SYNCHRONIZED SERIAL BUS TO PARALLEL
REC CUR
MA-181 BOARD (2/3)
SIRCS
SIRCS
See page 4-15)
PT-95 BOARD (2/2)
(See page 4-21)

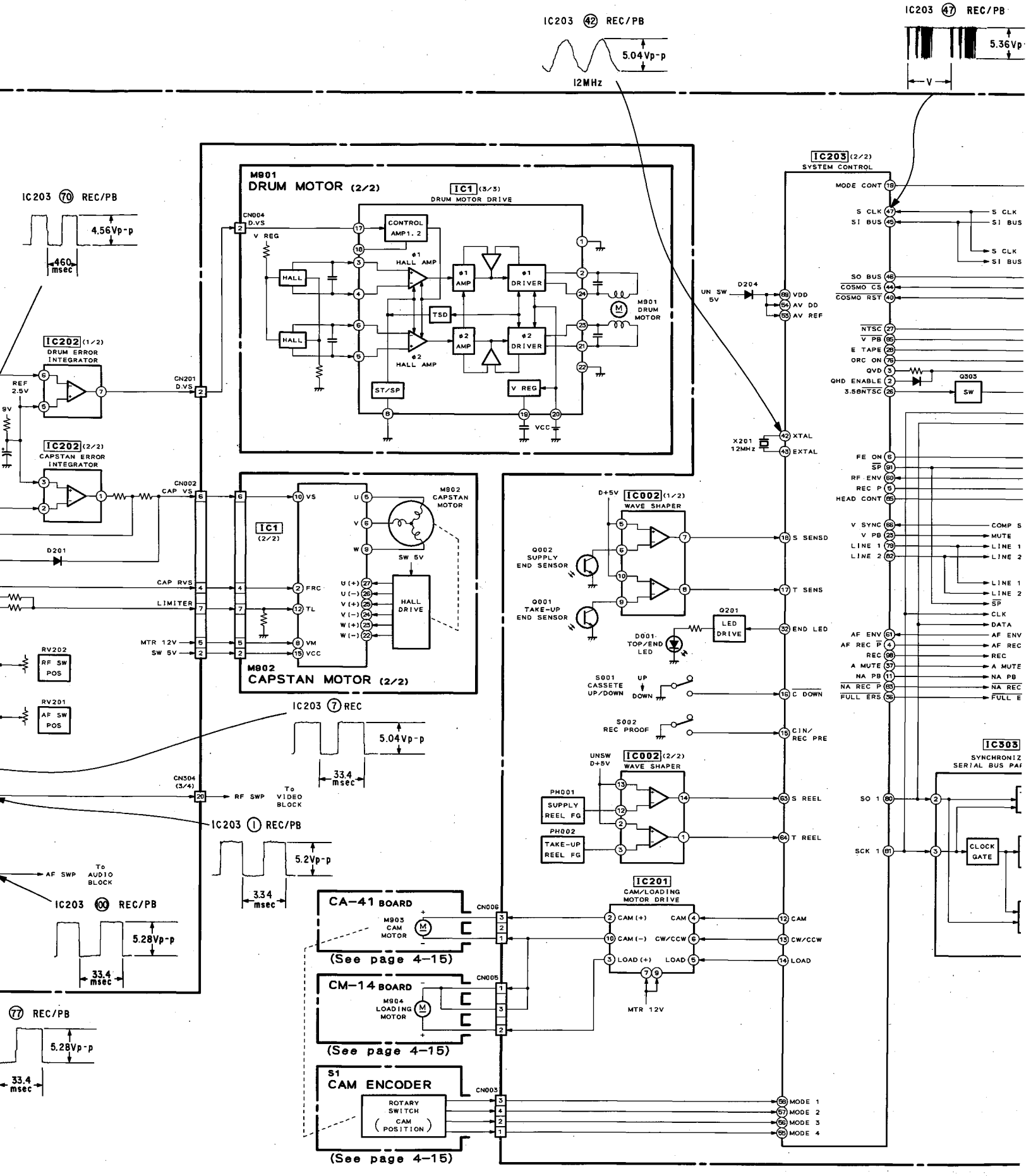
3-2. VIDEO BLOCK DIAGRAM

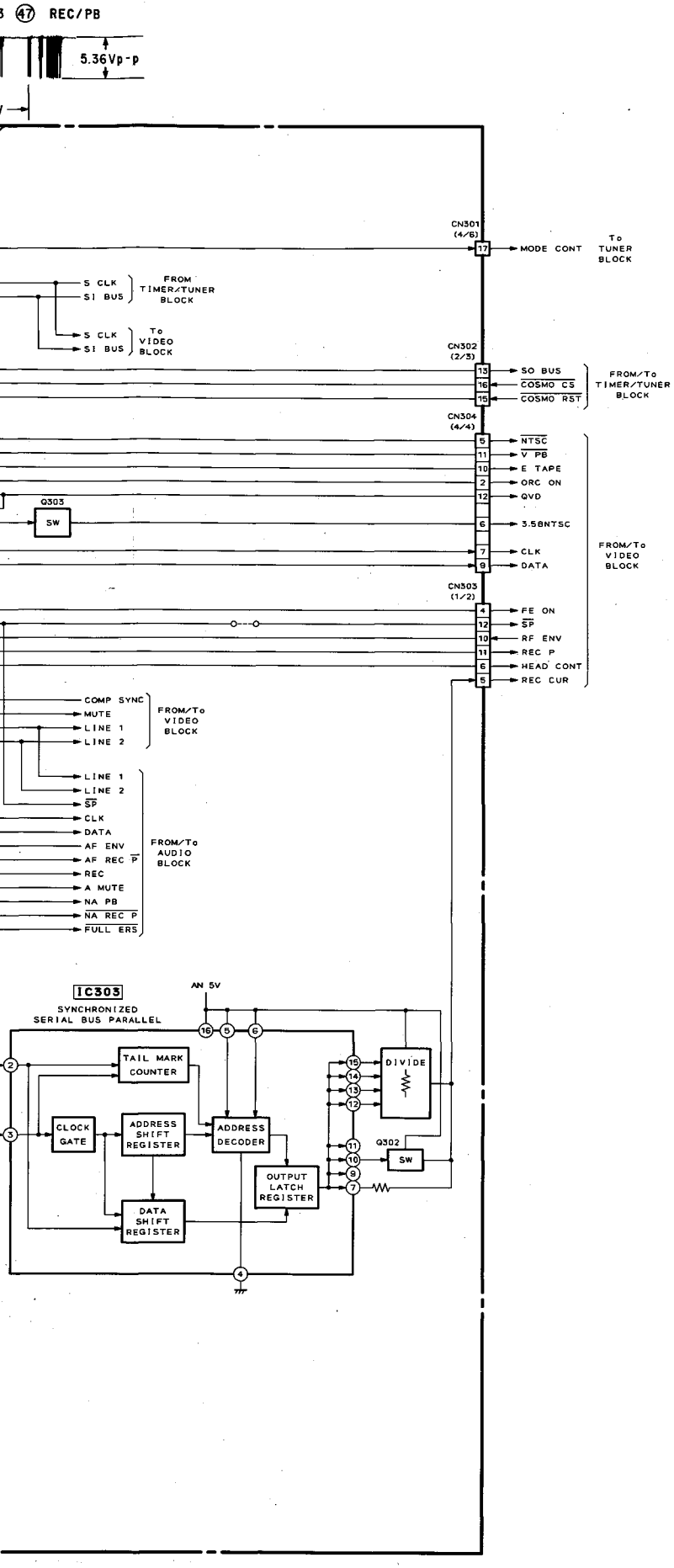



IC001 (47) REC
20mV/DIV
20μsec/DIV
640mVp-p
IC001 (33) REC
292mVp-p
IC001 (33) PB
352mVp-p
IC001 (32) REC
292mVp-p
IC001 (32) PB
336mVp-p
IC001 (43) PB 20μsec/DIV
290mVp-p
IC001
Y/C PROCESS
RV003 PB LEVEL
Q904 Q906-908 D901
DSF
Q909
BUFFER
LIM
FM DEMOD
L.P.F
MAIN DE-EMPH
Q040
SWITCH
Q021
SWITCH
RV4 WHITE CLIP
EMPH
MAIN EMPH
RV005 DEVIATION
RV006 CARRIER
FM MOD
X2
RV001 AGC
AGC
2M L.P.F
CHECK
XTAL VCO/ OSC
AFC APC
DOWN CONV
4fs GEN
MAIN CONV
DISCRI
1/2
2fL VCO
SERIAL CONTROL INTERFACE
X001 3.58MHz
T1
TANK COIL 8.4MHz
5V
Q016, 051
SWITCH
3.58M TRAP
SW 5V
DROP OUT DET
3V REG
Q011
BUFFER
Y L.P.F
NL DE-EMPH
NL EMPH
REC
PB
DO
DETAIL EMPH (PB THROUGH)
Y NR
IC003
1H CCD DELAY LINE
1H DELAY
7.16M B.P.F
Q006, 007
L.P.F
V APT
PICTURE CONT
Y/C MIX COLOR KILLER
6dB
REC EE
NOISE CANCEL
SYNC SEP
PULSE GEN
ACC
3.58MHz B.P.F
BURST EMPH/ DE-EMPH
1.3MHz L.P.F
DELEY
Q004
BUFFER
DL001
COMB FILTER
Q003
BUFFER
Q018
SWITCH
IC001 (51) PB
122mVp-p
IC001 (28) REC
2.04Vp-p
IC001 (28) PB
2.2Vp-p
IC001 (16) REC
608mVp-p
IC001 (16) PB
576mVp-p
IC001 (14) REC
632mVp-p
IC001 (14) PB
568mVp-p
IC001 (20) REC
696mV
IC001 (18) REC
118mVp-p
IC001 (6) REC/PB
1.48Vp-p
3.58MHz
IC001 (7) REC/PB
1.1Vp-p
3.58MHz
IC001 (53) REC
300mVp-p
XTSC
Y PB
E TAPE
OSC ON
DATA
CLOCK
Y/D
3.58MHz
VIDEO
FROM SYSTEM CONTROL BLOCK
IC401 (9)
4.64V
14.3MHz
LC OSC
Q405
BUFFER
CN401 (2/2)
CN405 (2/2)
CN401 (1/3) VIDEO
Q420
VIDEO MUTE
EXV SYNC
OSD CS
V SYNC
H DET
IC401 (19)
IC401 (16)
IC401 (18)
IC401 (21)
FROM/To TIMER/ TUNER BLOCK
PT-95
BOARD (2/5)
(See page 4-21)
CN304 (2/4)
COMP SYNC
CN301 (2/5)
Q506
BUFFER
To SYSTEM CONTROL BLOCK IC203 (66)
CN803 (2/2)
CN301 (3/5)
MOD V
To TUNER BLOCK
MA-181
BOARD (2/5)
(See page 4-15)
(See page 4-35)
IO-49
BOARD (2/3)
CN703 (2/2)
Q901
BUFFER
MOD V
CJ702 (2/2)
LINE1 OUT
VIDEO
LOCK DET

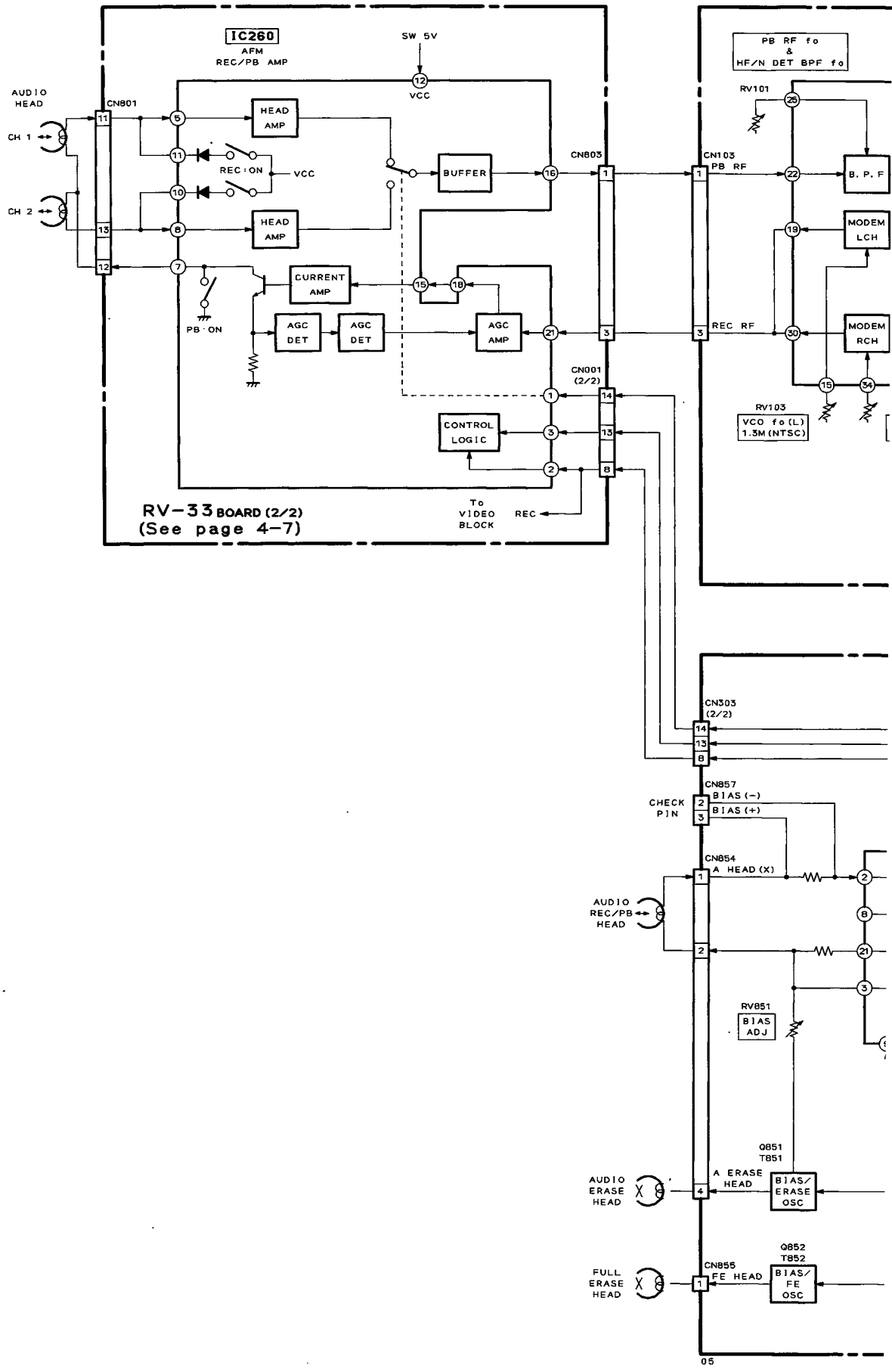
3-3. SERVO, SYSTEM CONTROL BLOCK DIAGRAM

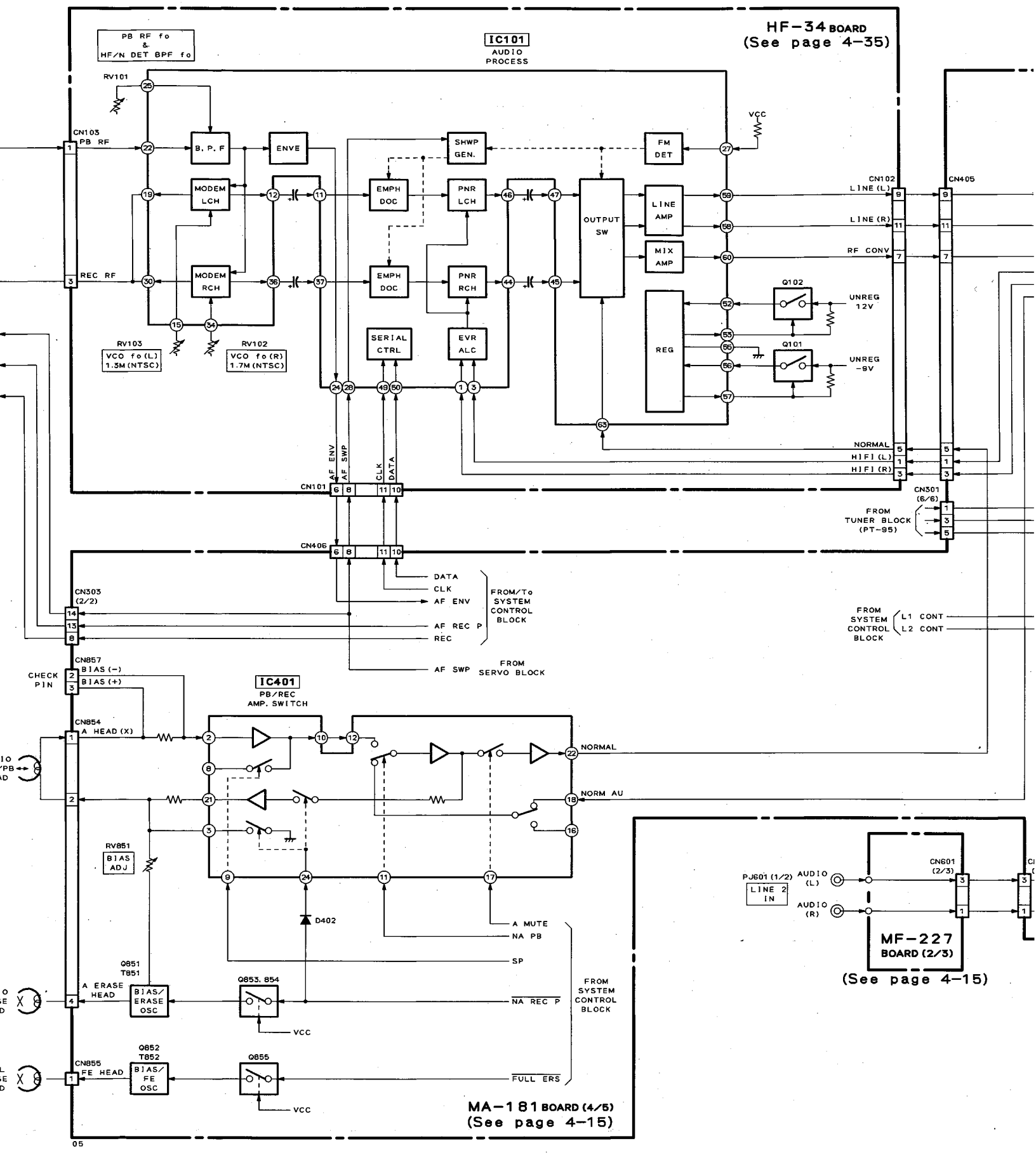



IC203 (42) REC/PB
5.04Vp-p
12MHz
IC203 (47) REC/PB
5.36Vp
V
M901
DRUM MOTOR (2/2)
IC1 (3/3)
DRUM MOTOR DRIVE
CONTROL AMP1. 2
HALL AMP
DRIVER
TSD
V REG
ST/SP
VCC
M901 DRUM MOTOR
IC203 (70) REC/PB
4.56Vp-p
460 msec
IC202 (1/2)
DRUM ERROR INTEGRATOR
REF 2.5V
IC202 (2/2)
CAPSTAN ERROR INTEGRATOR
CN201 D.VS
CN002 CAP VS
D201
CAP RVS
LIMITER
MTR 12V
SW 5V
RV202
RF SW POS
RV201
AF SW POS
M902
CAPSTAN MOTOR
IC1 (2/2)
VS
FRC
TL
VM
VCC
HALL DRIVE
M902 CAPSTAN MOTOR
SW 5V
IC203 (7) REC
5.04Vp-p
33.4 msec
CN304 (3/4)
RF SWP
To VIDEO BLOCK
IC203 (1) REC/PB
5.2Vp-p
33.4 msec
AF SWP
To AUDIO BLOCK
IC203 (100) REC/PB
5.28Vp-p
33.4 msec
(77) REC/PB
5.28Vp-p
33.4 msec
IC203 (2/2)
SYSTEM CONTROL
MODE CONT
S CLK
SI BUS
SO BUS
COSMO CS
COSMO RST
NTSC
V PB
E TAPE
ORC ON
QVD
QHD ENABLE
3.58NTSC
Q303
SW
UN SW 5V
D204
VDD
AV DD
AV REF
X201 12MHz
XTAL
EXTAL
FE ON
SP
RF ENV
REC P
HEAD CONT
V SYNC
V PB
LINE 1
LINE 2
COMP S
MUTE
CLK
DATA
AF ENV
AF REC P
REC
A MUTE
NA PB
NA REC P
FULL ERS
D+5V
IC002 (1/2)
WAVE SHAPER
Q002 SUPPLY END SENSOR
Q001 TAKE-UP END SENSOR
S SENSD
T SENS
Q201
LED DRIVE
D001 TOP/END LED
END LED
S001 CASSETE UP/DOWN
UP
DOWN
C DOWN
S002 REC PROOF
CIN/ REC PRE
UNSW D+5V
IC002 (2/2)
WAVE SHAPER
PH001 SUPPLY REEL FG
PH002 TAKE-UP REEL FG
S REEL
T REEL
IC303
SYNCHRONIZ
SERIAL BUS PAR
SO 1
SCK 1
CLOCK GATE
IC201
CAM/LOADING MOTOR DRIVE
CAM (+)
CAM (-)
LOAD (+)
LOAD
CAM
CW/CCW
LOAD
MTR 12V
CA-41 BOARD
M903 CAM MOTOR
CN006
(See page 4-15)
CM-14 BOARD
M904 LOADING MOTOR
CN005
(See page 4-15)
S1
CAM ENCODER
ROTARY SWITCH
CAM POSITION
CN003
(See page 4-15)
MODE 1
MODE 2
MODE 3
MODE 4


3 (47) REC/PB
5.36Vp-p
CN301 (4/6)
17 MODE CONT
To TUNER BLOCK
S CLK
SI BUS
FROM TIMER/TUNER BLOCK
S CLK
SI BUS
To VIDEO BLOCK
CN302 (2/3)
13 SO BUS
16 COSMO CS
15 COSMO RST
FROM/To TIMER/TUNER BLOCK
CN304 (4/4)
9 NTSC
11 V PB
10 E TAPE
2 ORC ON
12 QVD
Q303
SW
6 3.58NTSC
7 CLK
9 DATA
FROM/To VIDEO BLOCK
CN303 (1/2)
4 FE ON
12 SP
10 RF ENV
11 REC P
6 HEAD CONT
5 REC CUR
COMP SYNC
MUTE
LINE 1
LINE 2
FROM/To VIDEO BLOCK
LINE 1
LINE 2
SP
CLK
DATA
AF ENV
AF REC P
REC
A MUTE
NA PB
NA REC P
FULL ERS
FROM/To AUDIO BLOCK
IC303
SYNCHRONIZED SERIAL BUS PARALLEL
AN 5V
16
5
6
TAIL MARK COUNTER
CLOCK GATE
ADDRESS SHIFT REGISTER
ADDRESS DECODER
DIVIDE
15
14
13
12
11
10
9
7
Q302
SW
OUTPUT LATCH REGISTER
DATA SHIFT REGISTER
2
3
4

3-4. AUDIO BLOCK DIAGRAM




HF-34 BOARD
(See page 4-35)
PB RF fo & HF/N DET BPF fo
IC101
AUDIO PROCESS
RV101
CN103
PB RF
REC RF
B, P, F
ENVE
SHWP GEN.
FM DET
VCC
MODEM LCH
MODEM RCH
EMPH DOC
PNR LCH
PNR RCH
OUTPUT SW
LINE AMP
MIX AMP
REG
Q102
Q101
UNREG 12V
UNREG -9V
SERIAL CTRL
EVR ALC
RV103
VCO fo (L) 1.3M (NTSC)
RV102
VCO fo (R) 1.7M (NTSC)
CN102
LINE (L)
LINE (R)
RF CONV
CN405
NORMAL
HIFI (L)
HIFI (R)
CN101
AF ENV
AF SWP
CLK
DATA
CN406
CN301 (6/6)
FROM TUNER BLOCK (PT-95)
CN303 (2/2)
DATA
CLK
AF ENV
AF REC P
REC
FROM/To SYSTEM CONTROL BLOCK
AF SWP
FROM SERVO BLOCK
FROM SYSTEM CONTROL BLOCK
L1 CONT
L2 CONT
CN857
BIAS (-)
BIAS (+)
CHECK PIN
IC401
PB/REC AMP, SWITCH
CN854
A HEAD (X)
NORMAL
NORM AU
RV851
BIAS ADJ
D402
A MUTE
NA PB
SP
Q851
T851
A ERASE HEAD
BIAS/ ERASE OSC
Q853, 854
NA REC P
FROM SYSTEM CONTROL BLOCK
VCC
Q852
T852
CN855
FE HEAD
BIAS/ FE OSC
Q855
FULL ERS
VCC
MA-181 BOARD (4/5)
(See page 4-15)
PJ601 (1/2)
LINE 2 IN
AUDIO (L)
AUDIO (R)
CN601 (2/3)
MF-227 BOARD (2/3)
(See page 4-15)

REPAIR PARTS LIST

5-1. EXPLODED VIEWS

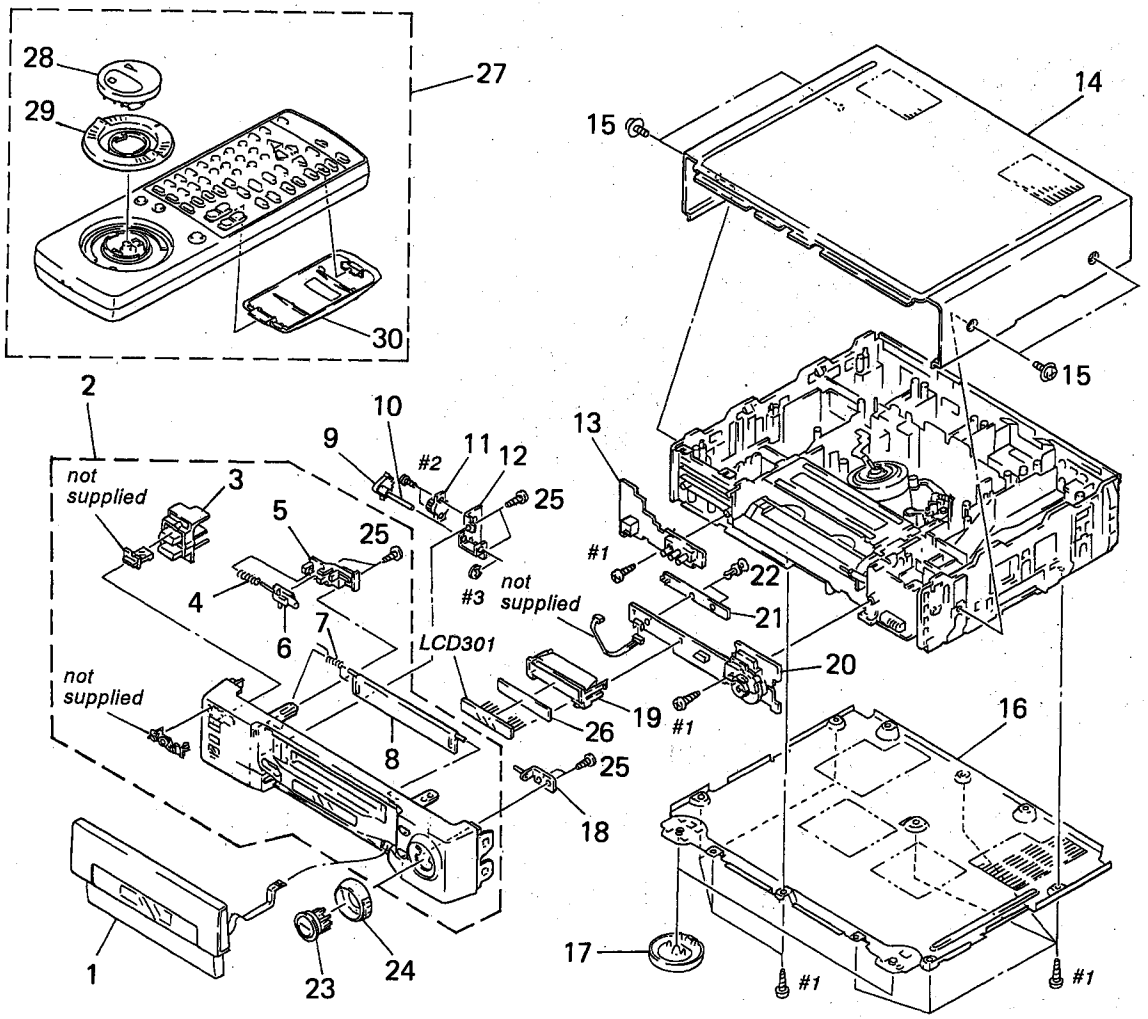
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Abbreviations
  CND: Canadian
  MX : Mexican
  PL : Philippine
  CS : Chilean
  JE : Tourist
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

5-1-1. FRONT PANEL AND CABINET ASSEMBLIES

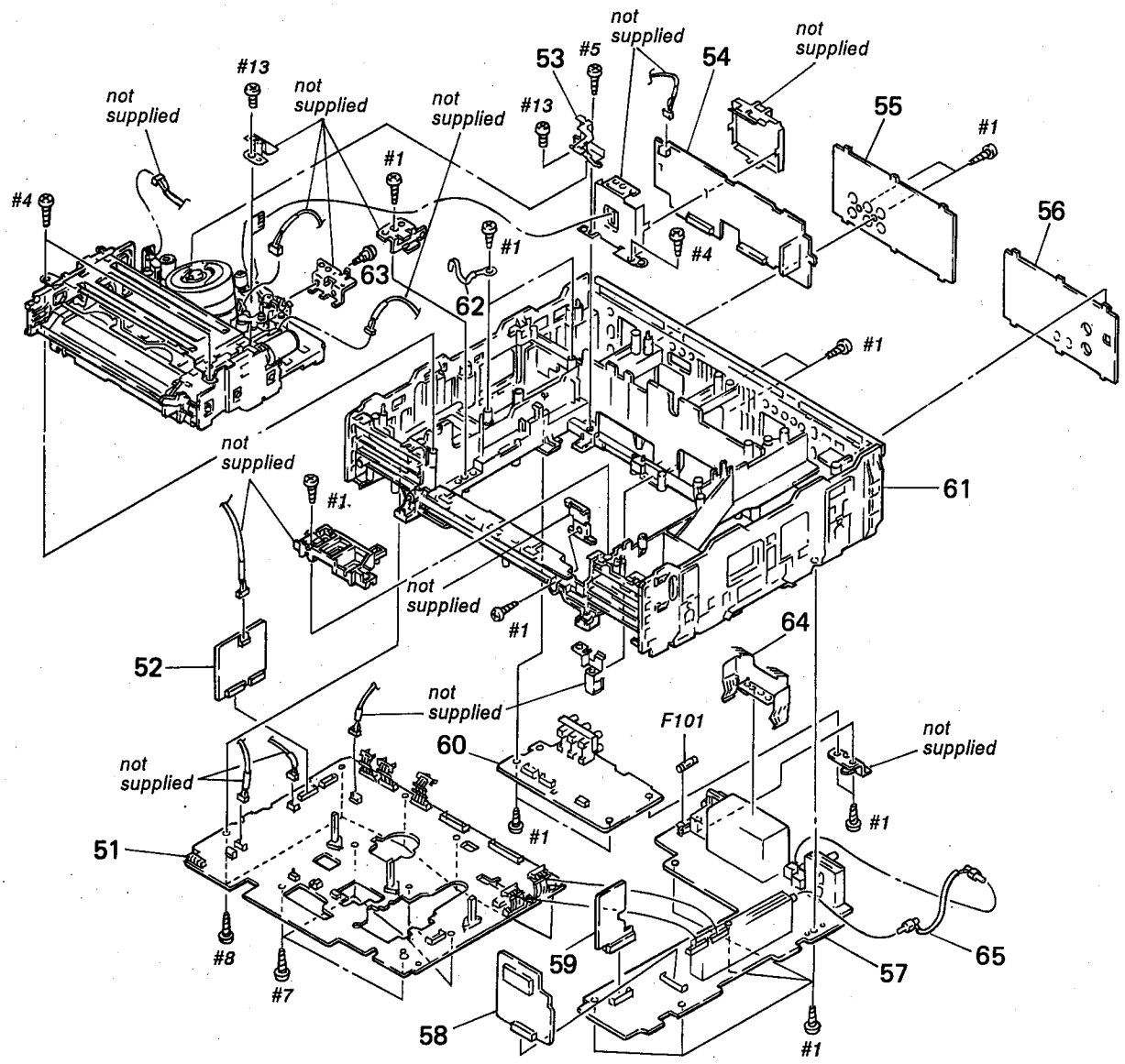


Ref. No.	Part No.	Description	Remark
1	1-467-386-31	SWITCH BLOCK, CONTROL (920HF:US, CND)	
1	1-467-386-41	SWITCH BLOCK, CONTROL (770HF/771HF)	
1	1-467-386-51	SWITCH BLOCK, CONTROL (920HF:MX, CS, PL, PX, JE)	
2	X-3943-592-2	PANEL ASSY, FRONT (770HF)	
2	X-3943-604-2	PANEL ASSY, FRONT (920HF:US, CND)	
2	X-3943-689-1	PANEL ASSY, FRONT (920HF:MX, CS, PL, PX, JE)	
2	X-3943-969-1	PANEL ASSY, FRONT (771HF)	
3	3-957-389-01	BUTTON, POWER/EJECT (770HF/920HF:US, CND)	
4	3-957-388-01	SPRING, COMPRESSION	
* 5	3-957-312-11	HOLDER, LOCK CLAW	
6	3-944-564-01	CLAW, LOCK	
7	3-951-089-01	SPRING (GE), FL	
8	3-951-086-81	DOOR, CASSETTE (770HF/920HF:US, CND)	
8	3-957-493-21	DOOR, CASSETTE (771HF/920HF:MX, CS, PL, PX, JE)	
9	3-957-382-01	GEAR, FULCRUM	
* 10	3-957-383-01	SHAFT, FULCRUM GEAR	
11	3-319-224-11	DAMPER, SMALL	
* 12	3-957-381-01	PLATE, FULCRUM (LEFT), DOOR	
* 13	A-6720-582-A	MF-227 BOARD, COMPLETE (920HF)	
* 13	A-6720-583-A	MF-227 BOARD, COMPLETE (770HF/771HF)	
* 14	3-957-396-01	CASE, UPPER (770HF/920HF:US, CND)	
* 14	3-957-396-11	CASE, UPPER (920HF:MX, CS, PL, PX, JE)	
15	3-710-901-11	SCREW, TAPPING	

Ref. No.	Part No.	Description	Remark
* 16	3-957-386-01	PLATE, BOTTOM	
17	3-957-246-01	INSULATOR	
* 18	X-3943-587-1	PLATE (RIGHT) ASSY, FULCRUM	
* 19	3-957-314-11	HOLDER, LCD	
* 20	A-6720-605-A	MF-226 BOARD, COMPLETE (920HF:CS, PL, PX, JE)	
* 20	A-6721-584-A	MF-226 BOARD, COMPLETE (770HF:US/771HF/920HF:US)	
* 20	A-6721-606-A	MF-226 BOARD, COMPLETE (770HF:CND/920HF:CND, MX, CS, PL, PX, JE)	
* 21	A-6720-585-A	PL-24 BOARD, COMPLETE	
* 22	3-957-327-01	RIVET, PUSH	
23	X-3943-591-1	BUTTON ASSY, FUNCTION (770HF/920HF:US, CND)	
23	X-3943-692-1	BUTTON ASSY, FUNCTION (771HF/920HF:MX, CS, PL, PX, JE)	
24	X-3943-556-1	RING ASSY, SHUTTLE (770HF/920HF:US, CND)	
24	X-3943-669-1	RING ASSY, SHUTTLE (771HF/920HF:MX, CS, PL, PX, JE)	
25	4-921-277-11	SCREW (B2.6X8), TAPPING, BIND	
26	3-957-338-01	ILLMINATOR	
27	1-467-383-11	REMOTE COMMANDER (RMT-V140A) (770HF/771HF)	
27	1-467-383-21	REMOTE COMMANDER (RMT-V140) (920HF)	
28	X-3943-638-1	BUTTON ASSY	
29	3-957-513-11	SHUTTLE RING	
30	3-708-817-01	COVER, BATTERY	

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

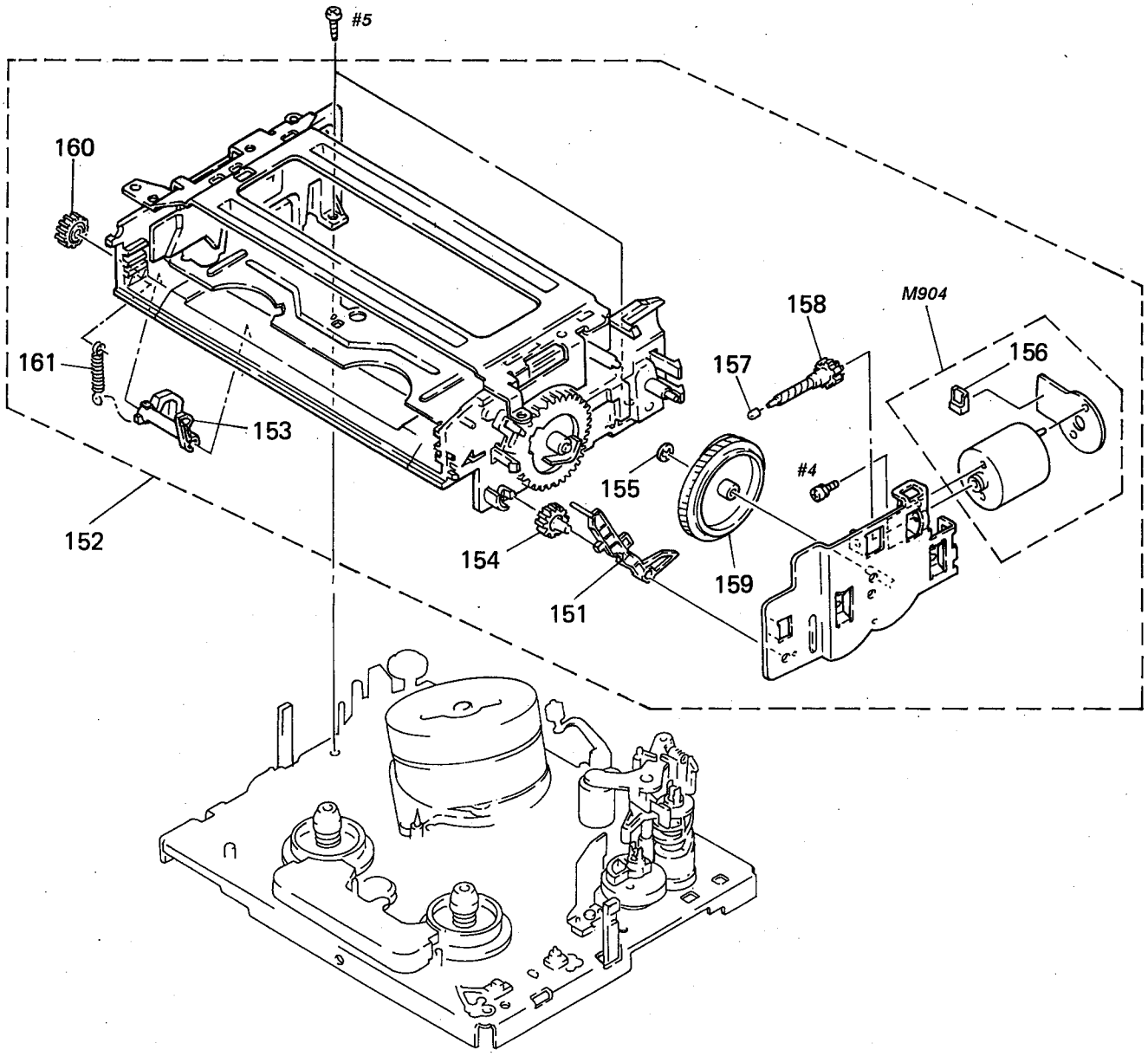
5-1-2. CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark
* 51	A-6782-257-A	MA-181 BOARD, COMPLETE (920HF)	
* 51	A-6782-258-A	MA-181 BOARD, COMPLETE (770HF/771HF)	
* 52	A-6721-586-A	HF-34 BOARD, COMPLETE	
* 53	X-3943-595-1	GROUND ASSY (GT), SHAFT	
* 54	A-6727-523-A	RV-33 BOARD, COMPLETE (920HF)	
* 54	A-6727-525-A	RV-33 BOARD, COMPLETE (770HF/771HF)	
* 55	3-957-418-01	PLATE, JACK (IO), REAR (770HF/920HF:US, CND)	
* 55	3-957-418-21	PLATE, JACK (IO), REAR (920HF:MX)	
* 55	3-957-418-31	PLATE JACK (IO), REAR (920HF:CS, PL, PX, JE)	
* 56	3-957-417-01	PLATE, JACK (TU), REAR	
* 57	A-6726-520-A	PT-95 BOARD, COMPLETE (770HF:CND)	
* 57	A-6727-522-A	PT-95 BOARD, COMPLETE (920HF:US, CND, MX)	
* 57	A-6727-524-A	PT-95 BOARD, COMPLETE (770HF/771HF)	

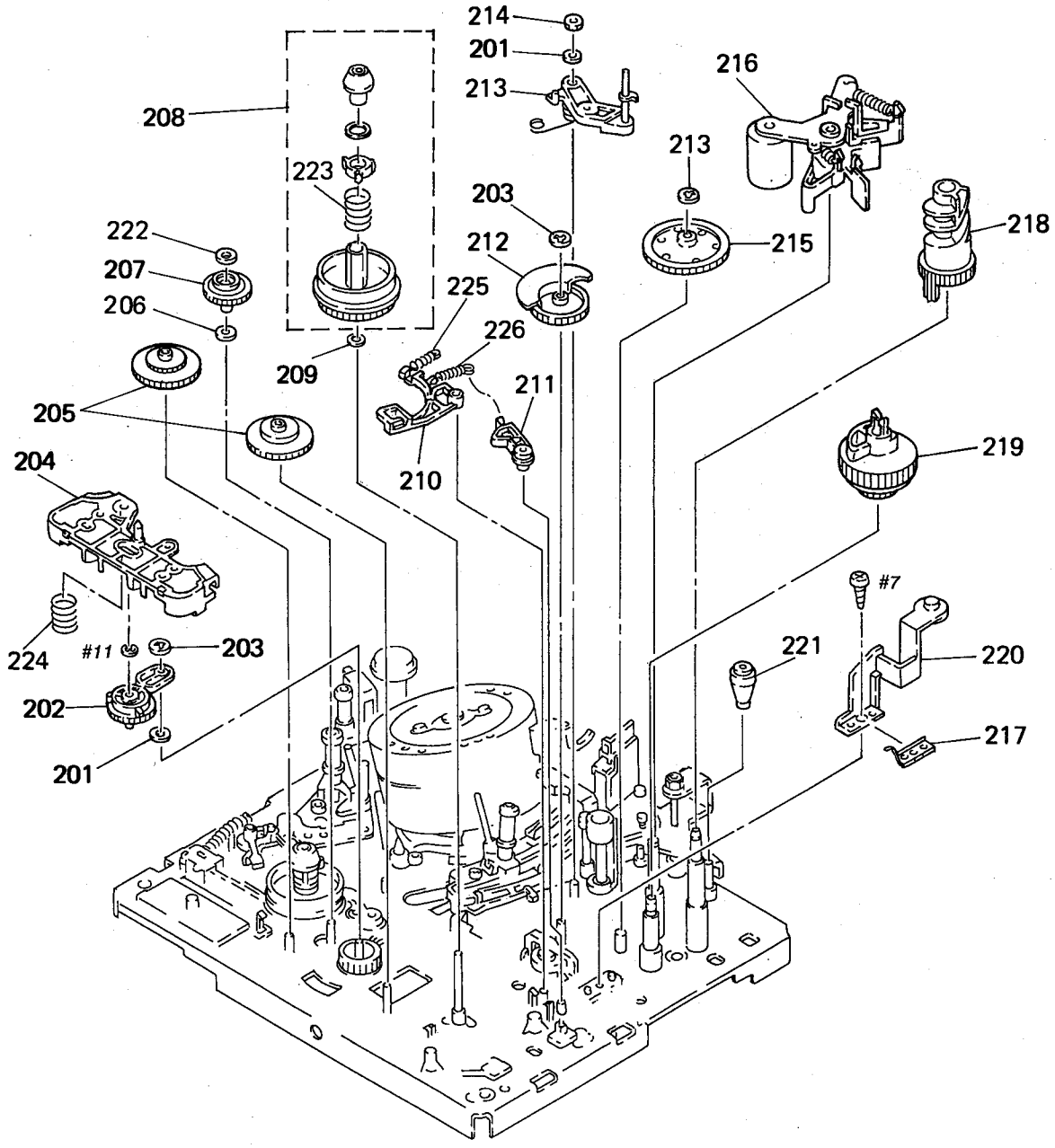
Ref. No.	Part No.	Description	Remark
* 57	A-6727-553-A	PT-95 BOARD, COMPLETE (920HF:CS, PL, PX, JE)	
* 58	A-6781-260-A	CB-44 BOARD, COMPLETE	
* 59	A-6754-645-A	CG-20 BOARD, COMPLETE	
* 60	A-6754-644-A	IO-49 BOARD, COMPLETE	
* 61	3-957-416-01	FRAME (GT), MOLD (770HF/771HF/920HF:US, CND, PX)	
* 61	3-957-416-21	FRAME (GT), MOLD (920HF:MX, CS, PL, JE)	
62	3-703-150-11	STOPPER, WIRING	
63	3-736-055-01	SCREW (3X8), TAPPING	
* 64	3-958-055-01	PLATE, GROUND, POWER	
65	1-558-924-21	CABLE, PIN	
⚠F101	1-532-743-11	FUSE, GLASS CYLINDRICAL (DIA. 5) (2A 125V) (770HF/771HF/920HF:US, CND, MX)	
⚠F101	1-576-228-11	FUSE (H. B. C.) (2A 125V) (920HF:CS, PL, PX, JE)	

5-1-3. FL CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description	Remark
151	3-741-935-06	LEVER, FLAT DOOR	
152	A-6751-421-A	FL BLOCK ASSY (M2)	
153	3-736-163-01	LEVER, ERASING PROTECTION	
154	X-3727-775-2	GEAR (RIGHT) ASSY, MIDWAY	
155	3-696-510-01	WASHER (3), STOPPER	
156	1-564-413-11	PIN, CONNECTOR 3P	
157	3-716-144-02	RETAINER, WORM	
158	3-736-100-01	GEAR (FL), WORM	
159	3-736-164-01	WHEEL (FL), WORM	
160	3-736-044-02	GEAR (LEFT), MIDWAY	
161	3-739-687-01	SPRING, TENSION (REC PROOF)	
M904	X-3727-784-1	MOTOR ASSY	

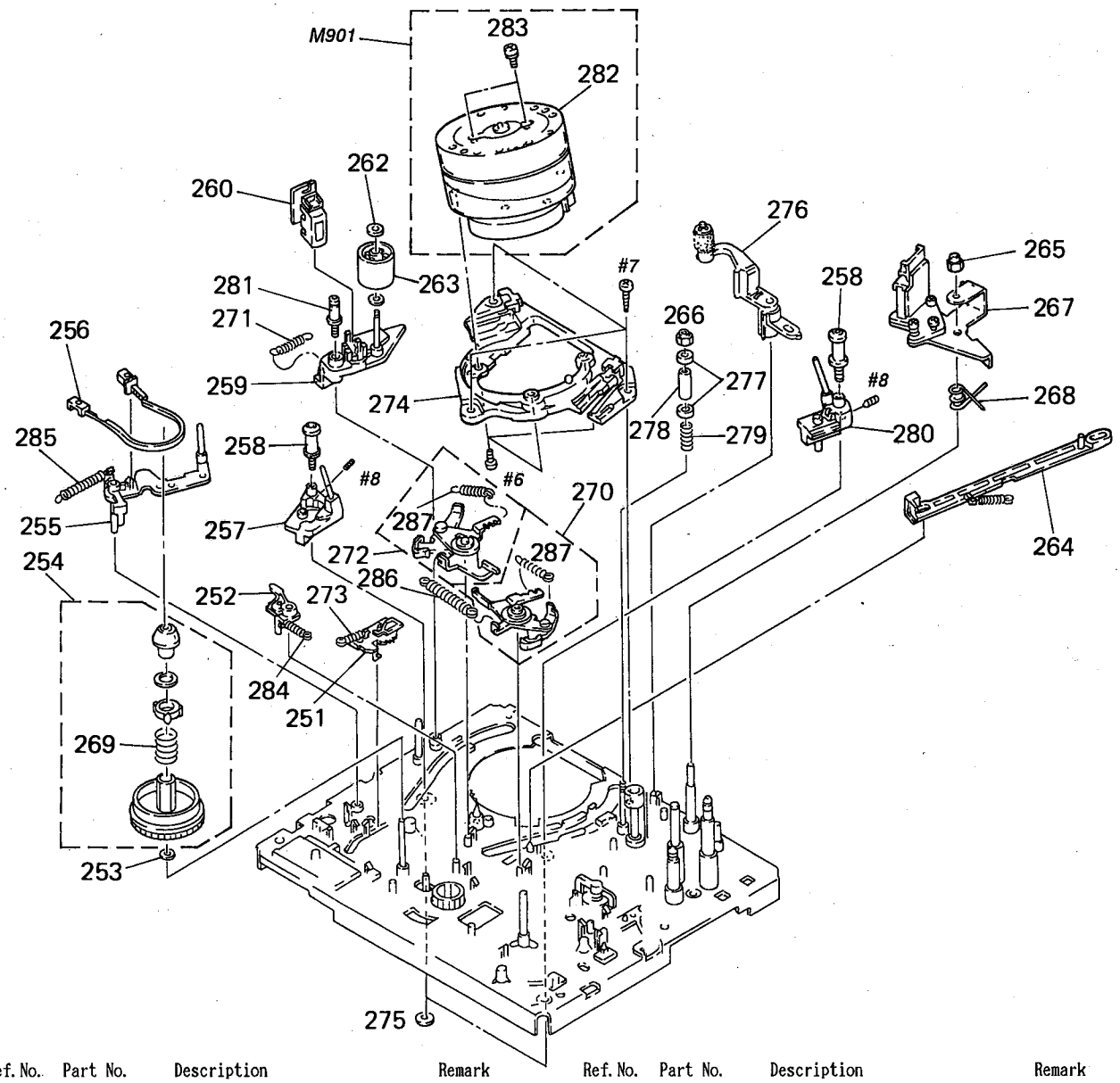
5-1-4. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description	Remark
201	3-701-748-00	CLAMP	
202	X-3727-776-1	ARM ASSY, PENDULUM	
203	3-669-595-00	WASHER (2), STOPPER	
204	3-736-172-02	RELEASE, LOCK, REEL	
205	X-3727-795-1	GEAR ASSY, RELAY	
206	3-736-074-01	RETAINER (SMALL), THRUST	
207	3-736-037-01	GEAR, REW	
208	X-3727-789-1	TABLE ASSY, REEL	
209	3-738-212-21	RETAINER, THRUST, REEL TABLE	
210	X-3733-335-1	BRAKE ASSY (AT), T SOFT	
211	3-736-105-01	ARM, REV BRAKE	
212	3-736-143-01	GEAR, RVS CAM	
213	X-3942-218-1	ARM ASSY, RVS	

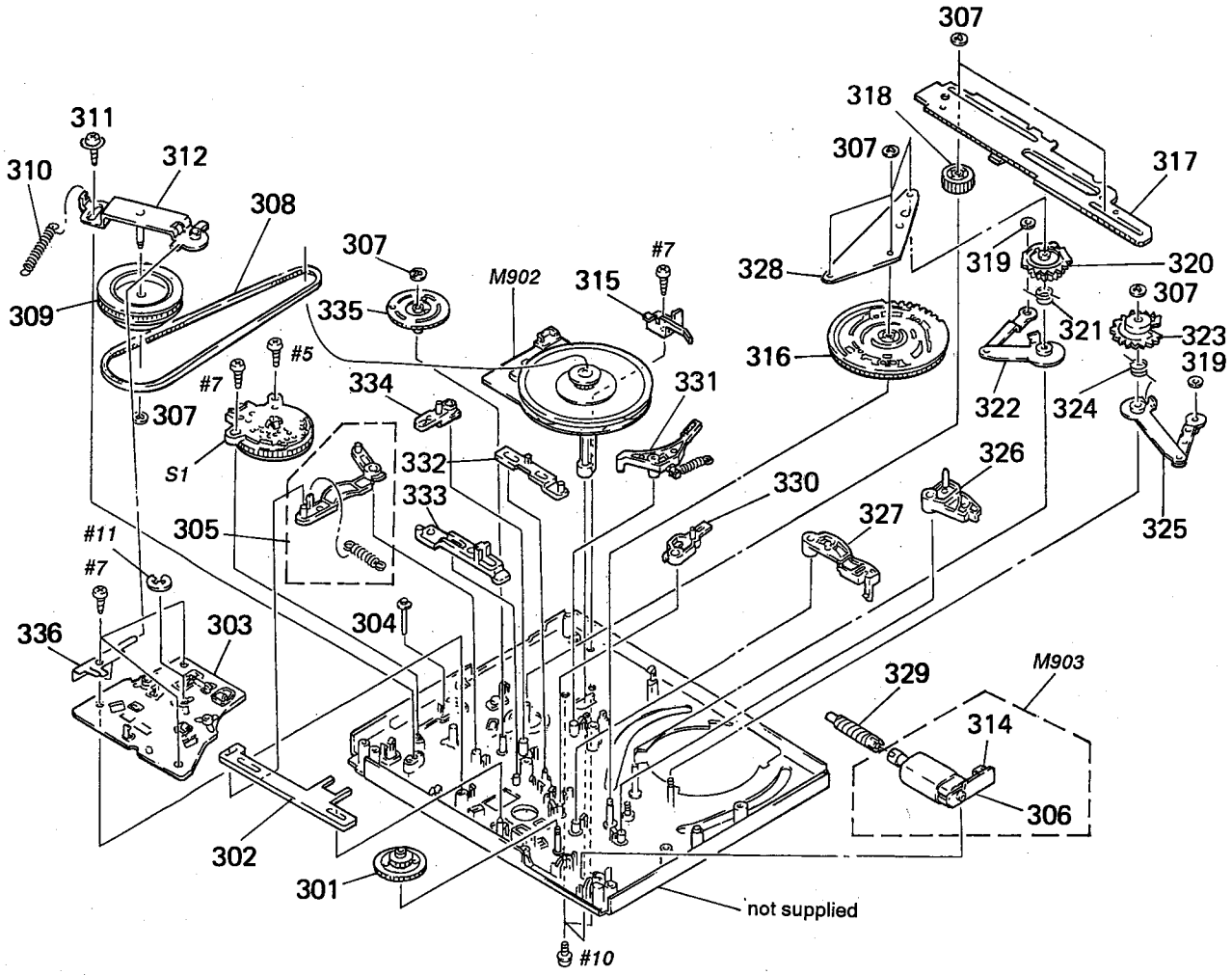
Ref. No.	Part No.	Description	Remark
214	3-736-740-01	NUT (M2X0.25), NYLON	
215	3-736-116-01	GEAR, COMMUNICATION	
216	X-3727-770-1	PINCH ROLLER BLOCK ASSY	
217	3-744-227-01	SPRING, FL GROUND	
218	3-952-182-01	CAM, ELEVATOR	
219	3-943-700-01	GEAR, PRESS CAM	
220	3-946-652-01	OPENER, LID	
221	3-738-250-01	SCREW, AC ADJUSTMENT	
222	3-736-069-01	RETAINER, SPRING	
223	3-739-621-01	SPRING, COMPRESSION	
224	3-736-020-11	SPRING, COMPRESSION	
225	3-736-024-01	SPRING, TENSION (FOR T SOFT BRAKE)	
226	3-736-025-01	SPRING, TENSION (REW BRAKE)	

5-1-5. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark
* 251	A-6759-483-A	TAKE-UP BLOCK ASSY, S	
252	X-3727-773-1	ARM ASSY (S), SOFT BRAKE	
253	3-738-212-21	RETAINER, THRUST, REEL TABLE	
254	X-3941-194-1	TABLE ASSY, REEL, S	
255	X-3727-772-5	ARM ASSY, TENSION REGULATOR	
256	X-3727-797-1	BAND ASSY, TENSION REGULATOR	
257	X-3272-786-1	SHUTTLE (LEFT) ASSY	
258	X-3733-301-1	ROLLER ASSY, GUIDE	
259	X-3942-897-1	BASE ASSY, STABILIZER	
260	1-543-647-11	HEAD, FE	
262	3-741-925-01	RING, RETAINING	
263	3-946-129-01	B STABLIZER	
264	X-3743-517-1	LEVER ASSY, RELEASE, C ROLLER	
265	3-942-867-01	NUT, AC HEIGHT ADJUSTMENT	
266	3-942-866-01	NUT (M3) (3X0.5), NYLON	
267	A-6761-129-C	HEAD BLOCK ASSY, ACE	
268	3-946-148-01	SPRING, TORSION	
269	3-739-621-01	SPRING, COMPRESSION	
270	X-3729-926-1	BRAKE ASSY (2), T	
271	3-736-745-01	SPRING, TENSION	
272	X-3733-336-2	BRAKE ASSY (2)AT, S	
273	3-738-284-01	SPRING, TENSION	
274	X-3727-791-2	DRUM (BASE) ASSY	
275	3-736-073-01	SLIDER, POLYETHYLENE	
276	A-6747-267-A	ARM BLOCK ASSY (S), C ROLLER	
277	3-736-733-02	FLANGE, 7 GUIDE	
278	3-736-730-01	SLEEVE, #7 GUIDE	
279	3-749-099-01	SPRING (#7 GUIDE), COMPRESSION	
280	X-3727-787-1	SHUTTLE (RIGHT) ASSY	
281	X-3727-788-1	ROLLER ASSY, GUIDE, #2	
282	8-848-576-01	DRUM ASSY, ROTARY UPPER (DZR-45-R) (770HF/771HF)	
282	8-848-581-01	DRUM ASSY, ROTARY UPPER (DZR-49-R) (920HF)	
283	2-643-205-01	SCREW (PSW3X8)	
284	3-736-047-01	SPRING, TENSION (S SOFT)	
285	3-733-389-01	SPRING, TENSION (TENSION REGULATOR AT)	
286	3-738-221-01	SPRING, TENSION (MAIN BRKE 1)	
287	3-738-220-01	SPRING, TENSION (MAIN BRKE 2)	
M901	8-848-575-11	DRUM ASSY DZH-45A-R (770HF/771HF)	
M901	8-848-580-11	DRUM ASSY DZH-49A-R (920HF)	

5-1-6. MECHANISM CHASSIS ASSEMBLY (3)



Ref. No.	Part No.	Description	Remark
301	3-736-015-01	WHEEL (CAM), WORM	
302	3-736-158-01	PLATE, SLIDE, PENDULUM	
303	A-6739-096-A	CHASSIS BLOCK ASSY, SUB	
304	3-736-091-01	PIN, SWITCH	
305	X-3729-924-1	ARM ASSY, PENDULUM FUNCTION	
* 306	1-633-460-11	CA-41 BOARD	
307	3-669-595-00	WASHER (2), STOPPER	
308	3-736-013-01	BELT, TIMING	
309	X-3727-782-1	PULLEY ASSY	
310	3-736-089-01	SPRING, TENSION	
311	3-749-796-11	SCREW, TAPPING +BVTP WASHER	
312	X-3727-761-1	ARM ASSY, ADJUSTMENT	
314	1-564-013-41	PIN, CONNECTOR 3P	
315	3-736-744-01	RETAINER, ROTOR	
316	3-736-176-01	GEAR, CAM	
317	3-736-177-01	PLATE, SLIDE, MODE	
318	3-733-394-01	GEAR, RVS RELAY	
319	3-736-069-01	RETAINER, SPRING	
320	3-736-148-01	GEAR (RIGHT), THREADING	
321	3-736-092-01	SPRING (RIGHT), TORSION	
322	X-3727-777-1	ARM (RIGHT) ASSY, LOADING	
323	3-736-147-01	GEAR (LEFT), THREADING	
324	3-736-040-01	SPRING (LEFT), TORSION	
325	X-3727-778-1	ARM (LEFT) ASSY, LOADING	
326	3-736-142-01	ARM, TENSION REGULATOR FUNCTION	
327	3-736-140-01	ARM, S TAKE-UP	
328	3-733-396-01	HOLDER, CAM GEAR	
329	3-733-395-01	GEAR (CAM), WORM	
330	3-733-397-01	ARM, BRAKE FUNCTION	
331	X-3727-769-1	BRAKE ASSY, CAP	
332	3-733-398-01	PLATE, SLIDE, BRAKE	
333	3-736-103-01	PLATE, SLIDE, LIMITER	
334	3-736-016-01	ARM, LIMITER FUNCTION	
335	3-736-170-01	GEAR, RKB CAM	
336	3-741-950-01	SPRING PLATE, SC GROUND (AT)	
M903	X-3733-302-1	MOTOR ASSY, CAM	
M902	8-835-489-01	MOTOR, DC U-26K	
S1	1-571-920-11	SWITCH, ROTARY (CAM ENCODER)	

5-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA...: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC..
  uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH
- Abbreviafions
  CND: Canadian
  MX: Mexican
  PL: Philppine
  CS: Chilean
  JE: Tourist

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
*	A-6781-260-A	CB-44 BOARD, COMPLETE			
		**********			
		(Ref. NO. 4,000 Series)			
		< CAPACITOR >			
C001	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C002	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C003	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C006	1-124-443-00	ELECT	100uF	20%	10V
C031	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C032	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C033	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C034	1-124-126-00	ELECT	47uF	20%	10V
C035	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C036	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C051	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C053	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C054	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C071	1-124-925-11	ELECT	2.2uF	20%	100V
C072	1-164-343-11	CERAMIC CHIP	0.056uF	10%	25V
C073	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C074	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C075	1-124-903-11	ELECT	1uF	20%	50V
C076	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
* CN001	1-573-827-11	CONNECTOR, BOARD TO BOARD 13P			
		< DIODE >			
D003	8-719-200-82	DIODE	11ES2		
D051	8-719-911-19	DIODE	1SS119		
		(770HF/771HF/920HF:US, CND, MX)			
		< IC >			
IC001	8-752-850-92	IC	CXP50116-440Q		
IC031	8-759-253-01	IC	SC420134B (MC68HC05)		
IC071	8-759-164-09	IC	LA7218M		
		< JUMPER RESISTOR >			
JR002	1-216-296-00	METAL CHIP	0	5%	1/8W
JR003	1-216-296-00	METAL CHIP	0	5%	1/8W
JR006	1-216-296-00	METAL CHIP	0	5%	1/8W
JR007	1-216-295-00	METAL CHIP	0	5%	1/10W
		< COIL >			
L001	1-410-509-11	INDUCTOR 10uH			
L002	1-410-509-11	INDUCTOR 10uH			
		< TRANSISTOR >			
Q001	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q002	8-729-140-75	TRANSISTOR	2SD999-CLCK		
Q003	8-729-422-27	TRANSISTOR	2SD601A-Q		
Q004	8-729-421-19	TRANSISTOR	UN2213		
Q053	8-729-422-27	TRANSISTOR	2SD601A-Q		
		< RESISTOR >			
R001	1-249-417-11	CARBON	1K	5%	1/4W F
R002	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R003	1-216-049-00	METAL CHIP	1K	5%	1/10W
R004	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R005	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R006	1-216-001-00	METAL CHIP	10	5%	1/10W
R007	1-216-049-00	METAL CHIP	1K	5%	1/10W
R008	1-249-417-11	CARBON	1K	5%	1/4W F
R009	1-216-049-00	METAL CHIP	1K	5%	1/10W
R010	1-216-049-00	METAL CHIP	1K	5%	1/10W
R011	1-216-049-00	METAL CHIP	1K	5%	1/10W
R012	1-216-049-00	METAL CHIP	1K	5%	1/10W
R013	1-216-049-00	METAL CHIP	1K	5%	1/10W
R014	1-216-049-00	METAL CHIP	1K	5%	1/10W
R015	1-216-073-00	METAL CHIP	10K	5%	1/10W
R031	1-249-417-11	CARBON	1K	5%	1/4W F
R032	1-216-049-00	METAL CHIP	1K	5%	1/10W
R033	1-249-414-11	CARBON	560	5%	1/4W F
R034	1-216-049-00	METAL CHIP	1K	5%	1/10W
R035	1-216-049-00	METAL CHIP	1K	5%	1/10W

CB-44 **CG-20** **HF-34**

Ref.No.	Part No.	Description			Remark
R036	1-216-295-00	METAL CHIP	0	5%	1/10W
R037	1-216-295-00	METAL CHIP	0	5%	1/10W
R038	1-216-073-00	METAL CHIP	10K	5%	1/10W
R039	1-216-081-00	METAL CHIP	22K	5%	1/10W
R057	1-216-043-00	METAL CHIP	560	5%	1/10W
R058	1-216-049-00	METAL CHIP	1K	5%	1/10W
R059	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R071	1-216-101-00	METAL CHIP	150K	5%	1/10W
R072	1-216-043-00	METAL CHIP	560	5%	1/10W
R073	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
		< VIBRATOR >			
X001	1-577-101-11	VIBRATOR, CERAMIC (4.19MHz)			
X031	1-579-125-11	VIBRATOR, CERAMIC (14.3MHz)			
X071	1-577-165-11	VIBLATOR, CERAMIC (500KHz)			

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* A-6754-645-A CG-20 BOARD, COMPLETE

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(Ref.NO. 4,000 Series)

		< CAPACITOR >			
C406	1-124-589-11	ELECT	47uF	20%	16V
C407	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C408	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C409	1-124-126-00	ELECT	47uF	20%	10V
C410	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C411	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C412	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C413	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C416	1-124-257-00	ELECT	2.2uF	20%	50V
C417	1-164-343-11	CERAMIC CHIP	0.056uF	10%	25V
C418	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C419	1-124-589-11	ELECT	47uF	20%	16V
C420	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C421	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C422	1-126-301-11	ELECT	1uF	20%	50V
C423	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C424	1-124-589-11	ELECT	47uF	20%	16V
C425	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C427	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C440	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C451	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
		< CONNECTOR >			
* CN401	1-573-827-11	CONNECTOR, BOARD TO BOARD 13P			
		< DIODE >			
D402	8-719-801-48	DIODE 1SS193			

Ref.No.	Part No.	Description			Remark
		< IC >			
IC401	8-759-247-43	IC MB90089PF-106-ER			
IC402	8-759-164-09	IC LA7218M			
		< JUMPER RESISTOR >			
JR401	1-216-296-00	METAL CHIP	0	5%	1/8W
JR403	1-216-295-00	METAL CHIP	0	5%	1/10W
JR404	1-216-295-00	METAL CHIP	0	5%	1/10W
		< COIL >			
L401	1-408-982-11	INDUCTOR 100uH			
L403	1-408-974-21	INDUCTOR 22uH			
L404	1-408-982-11	INDUCTOR 100uH			
		< TRANSISTOR >			
Q404	8-729-216-22	TRANSISTOR 2SA1162-G			
Q406	8-729-216-22	TRANSISTOR 2SA1162-G			
		< RESISTOR >			
R401	1-216-049-00	METAL CHIP	1K	5%	1/10W
R405	1-216-295-00	METAL CHIP	0	5%	1/10W
R406	1-216-295-00	METAL CHIP	0	5%	1/10W
R407	1-216-043-00	METAL CHIP	560	5%	1/10W
R408	1-216-101-00	METAL CHIP	150K	5%	1/10W
R409	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R410	1-216-043-00	METAL CHIP	560	5%	1/10W
R411	1-216-025-00	METAL CHIP	100	5%	1/10W
R414	1-216-081-00	METAL CHIP	22K	5%	1/10W
R415	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R416	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R417	1-216-033-00	METAL CHIP	220	5%	1/10W
R423	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< VIBRATOR >			
X401	1-577-381-11	VIBRATOR, CRYSTAL (14.3MHz)			
X402	1-577-165-11	VIBLATOR, CERAMIC (500KHz)			

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* A-6721-586-A HF-34 BOARD, COMPLETE

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(Ref.NO. 6,000 Series)

		< CAPACITOR >			
C101	1-124-907-11	ELECT	10uF	20%	50V
C102	1-124-907-11	ELECT	10uF	20%	50V
C103	1-124-927-11	ELECT	4.7uF	20%	100V
C104	1-124-927-11	ELECT	4.7uF	20%	100V
C105	1-124-126-00	ELECT	47uF	20%	10V

Ref. No.	Part No.	Description			Remark
C106	1-124-126-00	ELECT	47uF	20%	10V
C107	1-124-126-00	ELECT	47uF	20%	10V
C108	1-126-962-11	ELECT	3.3uF	20%	50V
C109	1-126-962-11	ELECT	3.3uF	20%	50V
C110	1-126-962-11	ELECT	3.3uF	20%	50V
C111	1-126-962-11	ELECT	3.3uF	20%	50V
C112	1-126-233-11	ELECT	22uF	20%	50V
C113	1-126-233-11	ELECT	22uF	20%	50V
C114	1-124-252-00	ELECT	0.33uF	20%	50V
C115	1-124-443-00	ELECT	100uF	20%	10V
C116	1-124-443-00	ELECT	100uF	20%	10V
C117	1-124-034-51	ELECT	33uF	20%	16V
C118	1-137-372-11	FILM	0.022uF	5%	50V
C119	1-137-372-11	FILM	0.022uF	5%	50V
C120	1-137-370-11	FILM	0.01uF	5%	50V
C121	1-137-370-11	FILM	0.01uF	5%	50V
C122	1-137-367-11	FILM	0.0033uF	5%	50V
C123	1-137-367-11	FILM	0.0033uF	5%	50V
C124	1-137-364-11	FILM	0.001uF	5%	50V
C125	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C126	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C127	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C128	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C129	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C130	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C131	1-137-372-11	FILM	0.022uF	5%	50V
C132	1-137-372-11	FILM	0.022uF	5%	50V
C133	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C134	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C135	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
* CN101	1-573-825-11	CONNECTOR, BOARD TO BOARD 11P			
* CN102	1-573-825-11	CONNECTOR, BOARD TO BOARD 11P			
* CN103	1-564-013-11	PIN, CONNECTOR 3P			
		< DIODE >			
D101	8-719-404-46	DIODE MA110			
		< IC >			
IC101	8-759-188-81	IC XLH7776K-VP			
		< TRANSISTOR >			
Q101	8-729-804-41	TRANSISTOR 2SB1122-S			
Q102	8-729-807-12	TRANSISTOR 2SD1802-S			

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R101	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R102	1-216-678-11	METAL CHIP	13K	0.5%	1/10W
R103	1-216-083-00	METAL CHIP	27K	5%	1/10W
R104	1-216-081-00	METAL CHIP	22K	5%	1/10W
R105	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R106	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R107	1-216-083-00	METAL CHIP	27K	5%	1/10W
R108	1-216-075-00	METAL CHIP	12K	5%	1/10W
R109	1-216-075-00	METAL CHIP	12K	5%	1/10W
R110	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R111	1-216-105-00	METAL CHIP	220K	5%	1/10W
R112	1-216-105-00	METAL CHIP	220K	5%	1/10W
R113	1-216-109-00	METAL CHIP	330K	5%	1/10W
R114	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R115	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R116	1-216-077-00	METAL CHIP	15K	5%	1/10W
R118	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R120	1-216-295-00	METAL CHIP	0	5%	1/10W
R123	1-216-295-00	METAL CHIP	0	5%	1/10W
R124	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R125	1-216-049-00	METAL CHIP	1K	5%	1/10W
R130	1-216-049-00	METAL CHIP	1K	5%	1/10W
		< VARIABLE RESISTOR >			
RV101	1-241-764-11	RES, ADJ, CERMET 10K			
RV102	1-241-763-11	RES, ADJ, CERMET 4.7K			
RV103	1-241-763-11	RES, ADJ, CERMET 4.7K			

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* A-6754-644-A IO-49 BOARD, COMPLETE

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(Ref. NO. 4,000 Series)

		< CAPACITOR >			
C701	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C702	1-124-126-00	ELECT	47uF	20%	10V
C707	1-124-126-00	ELECT	47uF	20%	10V
C710	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C711	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C751	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C752	1-124-126-00	ELECT	47uF	20%	10V
C757	1-124-126-00	ELECT	47uF	20%	10V
C901	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C902	1-124-477-11	ELECT	47uF	20%	25V
C903	1-124-126-00	ELECT	47uF	20%	10V
C904	1-124-472-11	ELECT	470uF	20%	10V

6-1. SYSTEM CONTROL – VIDEO BLOCK INTERFACE

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	REC• PAUSE
$\overline{\text{V•PB}}$	MA-181 IC203 ㊺	O	H	H	H	L	L	L	L	L	L	H	H
HEAD CONT	MA-181 IC203 ㊽	O	L	L	L	L	HI-Z (2.5 V)	*1	*10	*5	*5	L	L
RF SW P (SW30)	MA-181 IC203 ①	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
Q VD/V MUTE	MA-181 IC203 ②	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L
$\overline{\text{SP}}$	MA-181 IC203 ㊶	O	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
ENV GAIN	MA-181 IC203 ㊷	O	*11	*11	*11	*7	*7	*7	*7	*7	*7	*11	*11
REC•P	MA-181 IC203 ⑤	O	L	L	L	L	L	L	L	L	L	L	H
REC	MA-181 IC203 ㊾	O	L	L	L	L	L	L	L	L	L	H	H
V SYNC	MA-181 IC203 ㊻	I	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
OSD MUTE	MA-181 IC203 ⑪	O	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
E TAPE	MA-181 IC203 ㊾	O	L	L	L	*12	*12	*12	*12	*12	*12	L	L
NTSC	MA-181 IC203 ㊼	O	L	L	L	L	L	L	L	L	L	L	L
$\overline{\text{3.58NTSC}}$	MA-181 IC203 ㉖	O	L	L	L	L	L	L	L	L	L	L	L
JOG	MA-181 IC203 ㊼	O	L	L	L	L	H	H	H	H	H	L	L
ORC SETTEI	MA-181 IC203 ㊽	O	L	L	L	L	L	L	L	L	L	*13	*13

*1. Foward slow mode: "HI-Z (2.5 V)" in tape stop, "L" in tape running (approx. 40 msec.).
Foward slow mode: "HI-Z (2.5 V)" in tape stop, "H" in tape running SP mode (approx. 40 msec.).
"L" in tape running EP mode (approx. 40 msec.).
*2. Synchronized with drum rotation. 30 Hz 50% duty pulse.
*3. Normally "L". "H" when CTL signal is not generated.
*4. V period "H" pulse.
*5. "H" in SP mode. "L" in LP/EP mode.
*6. Selected by REC mode. SP mode: "L".
*7. Selected by tape recording mode.

Model / Signal	SP	LP	EP
$\overline{\text{SP}}$ ㊶	L	H	H
ENV GAIN ㊷	L	L	H

*8. Composite Sync signal (positive).
*9. "H" when menu screen or blue back screen.
*10. "HI-Z (2.5 V)" in LP/EP mode. "H" in SP mode.
*11. Selected by REC mode: "H" EP mode.
*12. "L" when APC is off. "H" when APC is ON and "HG tape" is used.
*13. "H" during APC measurement.

6-2. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	PEC• PAUSE	PB INDEX WRT/ERS
REC CTL	MA-181 IC203 ⑦	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	
$\overline{\text{CAP STOP}}$	MA-181 IC203 ⑧	O (O.D)	L	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	*3	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	
STEP PLS	MA-181 IC203 ㉔	O	L	L	L	L	L	L	L	*2	L	L	L	L	L	
CTL REC	MA-181 IC203 ㉘	O	L	L	L	L	L	L	L	L	L	L	L	H	H	H
INDEX	MA-181 IC203 ㉚	O	L	L	L	L	L	L	L	L	L	L	L	L	L	H
PB CTL	MA-181 IC203 ⑰	I	H/L	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H/L	
VD CTL	MA-181 IC203 ⑰	I	H/L	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H/L	
DRUM PG	MA-181 IC203 ⑱	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7	
DRUM FG	MA-181 IC203 ⑲	I	H/L	*8	*8	*5	*5	*8	*8	*8	*8	*8	*8	*8	*8	
CAP FG	MA-181 IC203 ⑩	I	H/L	*6	*6	*5	*5	*6	H/L	*9	*6	*6	*6	*6	H/L	
CAP DA	MA-181 IC203 ⑬	O	*10	*10	*10	*10	*10	*11	*10	*10	*11	*11	*11	*11	*10	
DRUM DA	MA-181 IC203 ⑭	O	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	
CTL STEP	MA-181 IC203 ㉙	O	L	L	L	L	L	L	L	*13	L	L	L	L	L	

*1. 30 Hz or 25 Hz pulse.
*2. Pulse at tape running.
*3. Reverse logic pulse of STEP PLS.
*4. "L" when drum rotation stop.
*5. Unstable period pulse.
*6. Pulse of period in proportion to tape speed.
*7. 30 Hz or 25 Hz pulse.
*8. 360 Hz or 300 Hz or 180/150 Hz pulse.
*9. Pulse at tape running.
*10. Approx. 2 msec period "H" or "L" pulse.
*11. Approx. 1.5 msec period "H" or "L" pulse.
*12. Approx. 3 msec period "H" or "L" pulse.
*13. "H" when FWD direction STEP drive.

6-3. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE

Signal	Pin No.	I/O	HI-SPEED REW	EJECTED	CASSETTE LOADING	CASSETTE UNLOAD-ING	TAPE THREAD-ING	TAPE UNTHREAD-ING	STOP	FF	REW	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	PEC• PAUSE
CAM *1	MA-181 IC203 ⑫	O	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L
LOAD	MA-181 IC203 ⑭	O	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L
CW/CCW	MA-181 IC203 ⑬	O			H	L	H	L											
MODE 1	MA-181 IC203 ⑱	I	H	L	L	L	H	H	L	H	H	H	L	L	H	H	H	H	L
MODE 2	MA-181 IC203 ⑰	I	L	H	H	H	H	H	L	L	L	L	H	H	L	L	L	L	H
MODE 3	MA-181 IC203 ⑯	I	H	H	H	H	L	L	L	L	L	H	H	H	H	H	L	H	H
MODE 4	MA-181 IC203 ⑮	I	H	H	H	H	H	H	L	H	H	L	L	L	L	L	L	L	L
REC PRF	MA-181 IC203 ⑮	I	*2	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
C-UP/DOWN	MA-181 IC203 ⑯	I	L	H	H→L	L→H	L	L	L	L	L	L	L	L	L	L	L	L	L
TREEL FG	MA-181 IC203 ⑭	I	*3	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
SREEL FG	MA-181 IC203 ⑬	I	*3	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
END LED	MA-181 IC203 ⑫	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP TRQ 1	MA-181 IC203 ⑲	O (O.D)	*1							*1	*1			*6		*1	*1		
CAP TRQ 2	MA-181 IC203 ⑳	O (O.D)								*1	*1								
CAP RVS	MA-181 IC203 ⑦	O	H	H			L	H	H/L	L	H	L	L	L/*5	L	L	H	L	L
T SENS	MA-181 IC203 ⑪	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
S SENS	MA-181 IC203 ⑩	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7

*1. "L" when mechanism mode transition.
*2. "L" when erasing protection tab is bent, "H" when not bent.
*3. Pause of period in proportion to reel rotating speed.
*4. Approx. 2 msec period "H" pulse.
*5. Pulse at tape running.
*6. "L" when tape running and CAP RVS is "H".
*7. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.

6-4. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE

Signal	Pin No.	I/O	I/O level
$\overline{\text{COSMO•RESET}}$	MA-181 IC203 ㊵	I	Normally "H". "L" when service interruption is detected or restored.
$\overline{\text{COSMO•CS}}$	MA-181 IC203 ㊹	I	Chip select signal from timer microprocessor. V period "L" pulse.
SI•BUS	MA-181 IC203 ㊺	I	Serial communication data from timer microprocessor. V period "L" pulse.
SO•BUS	MA-181 IC203 ㊻	O	Serial communication data to timer microprocessor. V period "L" pulse.
S CLK	MA-181 IC203 ㊼	I	Serial communication clock with timer microprocessor. V period "L" pulse.

6-5. SYSTEM CONTROL – AUDIO BLOCK INTERFACE

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOAD-ING	PB	PB• PAUSE	SLOW	×2	CUE	REVIEW	REC	REC• PAUSE
AF ENVELOP	MA-181 IC203 ㊶	I	AF RF envelope signal input terminal for automatic tracking.										
NA PB	MA-181 IC203 ⑪	O	L	L	L	H	H	H	H	H	H	L	L
A MUTE	MA-181 IC203 ㊲	O (O.D)	L	L	L	*4	H	H	H	H	H	L	L
$\overline{\text{SP}}$	MA-181 IC203 ㊸	O	*2	*2	*2	*3	*3	*3	*3	*3	*3	*2	*2
NA REC•$\overline{\text{P}}$	MA-181 IC203 ⑩	O	L	L	L	L	L	L	L	L	L	H	L
AF REC•$\overline{\text{P}}$	MA-181 IC203 ④	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-181 IC203 ⑳	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
AF SW POSITION	MA-181 IC203 ㊵	I	Input terminal for AF switching position adjustment.										
FULL $\overline{\text{ERS}}$	MA-181 IC203 ㊴	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. 30 Hz 50% duty pulse approx. 5 msec delayed from RF SW P.
*2. Selected by REC mode selector. SP mode: "L".
*3. Selected by tape recording mode. SP mode: "L".
*4. Nomaly "L", "H" when there is not CTL pulse.

6-6. SYSTEM CONTROL AND RF MODULATOR – INPUT SELECTION BLOCK INTERFACE

Signal	Pin No.	I/O	I/O level
LINE 1	MA-181 IC203 ⑲	O	*1. Input select control signal.
LINE 2	MA-181 IC203 ⑫	O	

*1.

Signal \ Input	Tuner	LINE 1	LINE 2
LINE 1 ⑲	L	H	L
LINE 2 ⑫	L	L	H

6-7. SERVO SYSTEM CONTROL MICROPROCESSOR PIN FUNCTION (MA-181 BOARD IC203 CXP80724-083Q)

Pin No.	Pin Name	I/O	Function
1	RF SWP	O	Video switching pulse output
2	Q VD	O	Quasi VD pulse output
3	Q HD ENBL	O	Quasi HD voltage level control
4	AF REC $\overline{P}$	O	"H" output when hi-fi audio REC
5	RECP	O	"H" output when video REC-PAUSE
6	FE ON	O	Flaying erase ON/OFF (SLV-920HF)
7	REC CTL	O	REC CTL output
8	INT VD	O	Internal VD signal. Not used
9		O	Not used
10		O	Not used
11	NA PB	O	"H" when normal audio playback
12	CAM	O	CAM motor select
13	CW	O	Clockwise/counterclockwise signal output
14	LOAD	O	Loading motor select
15	CIN/REC PRF	I	Erasing protection tab, cassette IN detection input
16	C DOWN	I	Cassette up/down detection input
17	T SENS	I	Take up end sensor input
18	S SENS	I	Supply end sensor input
19	MOD CONT	O	RF modulator ON/OFF control
20	BS-MONI	O	"M" when BS monitor. Not used
21	MESECAM	I	"L" in NT mode. Not used
22	SECAM	I	"L" in NT mode. Not used
23	VPB	O	VPB reverse
24	STEP PLS	O	"H" when capstan step drive
25	3.58/4.43 NTSC	O	"H"
26	$\overline{3.58\ NTSC}$	O	"L"
27	$\overline{NTSC}$	O	"L"
28	E-TAPE	O	"H" when HG tape using
29	BS BILING	O	"H" when BS bilingual. Not used
30	C+CONT	O	CANAL + control. Not used
31		O	Not used
32	END LED	O	END sensor LED drive output
33	CAP TPQ2	O	Capstan current control. "L" when FF/REW ➡ stop
34	CAP TPQ1	O	Capstan current control. "L" when slow down
35	PAL	O	"L"
36	$\overline{FULL\ ERS}$	O	"L" when full erase head operation
37	A MUTE	O	Audio MUTE output
38	$\overline{CAP\ STOP}$	O	Capstan STOP signal output
39	MP	I	Fixed at "L" level
40	$\overline{COSMO\ RST}$	I	System reset input
41			GND
42	XTAL		System clock 12 MHz
43	EXTAL		
44	$\overline{COSMO\ CS}$	I	Chip select signal
45	SI0	I	Signal for serial communication
46	SO0	O	
47	SCLK	I	
48	L METER	O	Not used
49	R METER	O	Not used

Pin No.	Pin Name	I/O	Function
50	NTPB SW	I	Not used
51	AF SW POSI	I	VR input for hi-fi switching pulse position adjustment
52	AVss		GND
53	AVREF		AD port reference input. UNSW 5 V
54	AVDD		UNSW 5 V
55	MODE4	I	Mechanism section CAM encoder input
56	MODE3	I	
57	MODE2	I	
58	MODE1	I	
59	DEW	I	DEW sensor input. Not used
60	RF ENV	I	Video RF envelope input
61	AF ENV	I	hi-fi audio RF envelope input
62	RF SW POSI	I	VR input for RF switching position adjustment
63	SREEL FG	I	S reel sensor input
64	TREEL FG	I	T reel sensor input
65	NT JUDGE	I	Not used
66	V SYNC	I	Composite sync input
67	PB CTL	I	Playback CTL input
68	DRM PG	I	Drum PG input
69	DRM FG	I	Drum FG input
70	CAP FG	I	Capstan FG input
71	OSD MUTE	O	"H" when blue back
72		O	Not used
73	CAP D/A	O	Capstan error D/A output
74	DRM D/A	O	Drum error D/A output
75	$\overline{EP}$	O	"L" when EP mode REC
76	ORC SETTEI	O	"H" when ORC measurement
77	VD CTL	I	Playback CTL input
78	AMS IN	I	Not used
79	LINE1	O	Video/audio input select signal
80	1	O	Expansion port for serial communication
81	SCK1	O	
82	LINE2	O	Video/audio input select signal
83	$\overline{NA\ REC\ P}$	I/O	"H" when recording normal audio
84	CAP RVS	I/O	Capstan reverse signal output
85	HEAD CONT	I/O	Head select control
86		I	Not used
87		O	Not used
88			GND
89			UNSW 5 V
90			Connected to UNSW 5 V
91	$\overline{SP}$	O	"L" when SP mode
92	ENV GAIN	O	RF envelope gain control
93	CTL STEP	O	CTL amp step control
94	CTL REC	O	CTL amp recording inhibition
95	$\overline{V\ PB}$	O	"L" when video playback
96	CTL INDEX	O	CTL amp index control
97	JOG	O	"H" when trick play mode
98	REC	O	Rise up signal of head amp recording power
99	LP HEAD	O	(PAL) Head select control
100	AF SWP	O	hi-fi switching pulse output

6-8. TIMER, TUNER, MODE CONTROL MICROPROCESSOR PIN FUNCTION (PT-95 BOARD IC401 MB89096-120)

Pin No.	Pin Name	I/O	Function
1	CL1		Connected to oscillator for clock
2	CL0		Connected to oscillator for clock
3	MOD0		
4	MOD1		
5	X0		Connected to main oscilltor
6	X1		Connected to main oscilltor
7	Vss		
8	$\overline{\text{RESET}}$	I	Reset signal in
9	FF	O	FF LED
10	REW	O	REW LED
11	H-S-REW	O	HI-SPEED REW LED
12	B. LIGHT CONT	O	LCD back light ON/OFF control signal
13			Not used
14	$\overline{\text{LCD CS}}$	O	LCD driver chip select signal
15	$\overline{\text{COSMO RESET}}$	O	System controller reset signal
16	$\overline{\text{CC CS}}$	O	Character generator chip select signal
17	$\overline{\text{POWER FAIL}}$	I	Power failure detect sgnal in
18	$\overline{\text{V SYNC}}$	I	V sync. signal in
19	POWER CONT	O	Power ON/OFF control signal
20	$\overline{\text{COSMO CS}}$	O	System controller chip select signal
21	H DET	I	Video signal detect signal in
22			
23	$\overline{\text{STEREO}}$	I	Tuner audio mode in (Stereo)
24			Not used
25	$\overline{\text{PAUSE}}$	O	PAUSE LED
26	$\overline{\text{TIMER}}$	O	TIMER RED
27	$\overline{\text{REC}}$	O	REC RED
28	CMOD		
29	TA MUTE	O	Tuner audio mute control signal
30	F MONO	O	Tuner audio select
31	A PRST	O	Sensitivity select for auto presetting
32	SIRCS IN	I	SIRCS signal in
33	PLL CLOCK	O	Tuner clock signal
34	PLL DATA	O	Tuner data signal
35	PLL ENABLE	O	Tuner enable signal
36	SAP/$\overline{\text{MAIN}}$	O	Normal audio SAP/MAIN select control
37	$\overline{\text{CB RST}}$	O	Cable Box microcomputer reset
38	$\overline{\text{CB CS}}$	O	Cable Box microcomputer chip select
39-52	N. C.		
53	V1dp		
54-57	N. C.		
58	Vss		
59-66	N. C.		
67	Vcc		
68-74	N. C.		
75	$\overline{\text{EDS CS}}$	O	EDS microcomputer chip select
76	POWER CONT 2	O	Power supply control signal for EDS
77	SO BUS	I	Serial data input
78	SI BUS	O	Serial deata output
79	S CLK	O	Clock for serial communication
80	MEM CS	O	E^2 PROM chip select signal
81	MEM CLK	O	E^2 PROM clock
82	MEM DATA	O	E^2 PROM data
83	AVss		
84	AFT	I	Tuner AFT input
85			Not used
86	A/D2	I	Key reading A/D input
87	A/D3	I	Key reading A/D input
88	A/D4	I	Key reading A/D input
89	A/D5	I	Key reading A/D input
90	A/D6	I	Key reading A/D input
91	A/D7	I	Key reading A/D input
92	AVcc		
93	FWD	O	Forward playback LED
94	DEST 1	I	Destination discriminating A/D input
95	DEST 2	I	Destination discriminating A/D input
96	RVS	O	Reverse playback LED
97	–		
98	B. L. LED	O	LCD back light LED control output
99	BUZZER	O	Buzzre out
100	Vcc		

6-9. EDS CONTROL MICROPROCESSOR PIN FUNCTION (CB-44 BOARD IC031 MC68HC05CC1)

Pin No.	Pin Name	I/O	Function
1	$\overline{\text{COSMO RESET}}$	I	Reset signal in
2	$\overline{\text{IRQ}}$	I	EDS chip select signal input from mode control microprocessor
3, 4	PC4, PC5		Not used
5-12	PA0-PA7		Not used
13	VIDEO IN	I	Video signal for closed caption input
14	PD0		Not used
15	SDL	I/O	Serial data signal
16	SCL	I/O	Serial clock signal
17-19	PD3-PD5		Not used
20	V_{DD}		VDD
21	V_{SS}		GND
22, 23	PD6, PD7		Not used
24	$\overline{\text{EXH SYNC}}$	I	Horizontal sync. signal input
25	$\overline{\text{EXV SYNC}}$	I	Vertical sync. signal input
26, 27	R1 VCO	I	PLL oscillating circuit control signal input
28, 29	PC0, PC6		Not used
30-37	DA0/PB0 DA7/PB7		Not used
38-40	PC1-PC3		Not used
41	OSC2	O	Connected to oscillator
42	OSC1	I	Connected to oscillator

SECTION 7
ELECTRICAL ADJUSTMENTS

During the adjustment, see the Parts Arrangement Diagram for adjustments on Page 7-8.

7-1. MECHANICAL ADJUSTMENTS

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT II.

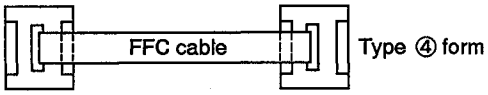
7-2. ELECTRICAL ADJUSTMENTS

2-1. PRE-ADJUSTMENT PREPARATIONS

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

2-1-1. Instruments to be Used

1) Color TV
2) Oscilloscope 1 or 2 phenomena, band more than 30 MHz, delay mode, as provided.
3) Frequency counter (min. 8 digits)
4) NTSC pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Attenuator
9) Distortion factor meter
10) Voice multiple signal generator
11) Alignment tape
    Part Code: H7099046H (MH-1)
    Part Code: H7099153H (Hi-Fi 400 Hz)
12) Extension cables (See page 7-3 for using location)



① CG-20 (CN401) ↔ PT-95 (CN405)
(13 pins J-6090-045-A)
② HF-34 (CN101) ↔ MA-181 (CN406)
(11 pins J-6090-047-A)
③ HF-34 (CN102) ↔ MA-181 (CN405)
(11 pins J-6090-047-A)
④ RV-33 (CN001) ↔ MA-181 (CN303)
(14 pins J-6090-044-A)
⑤ RV-33 (CN002) ↔ MA-181 (CN304)
(20 pins J-6090-043-A)

2-1-2. Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

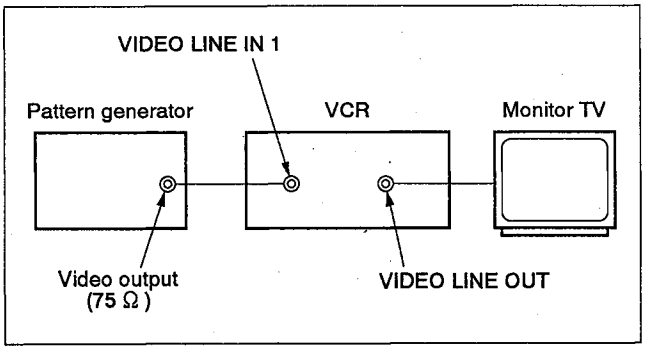


Fig. 7-2-1.

2-1-3. Set-up of Adjustment

In this adjustment, NTSC pattern generator is connected with LINE 1 input signal terminal. When check to tuner, connected AERIAL terminal. Check that the amplitudes of video signal SYNC signal, of picture portions, and of burst signals are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst sigal and "red" signal are 0.30 : 0.66. Fig. 7-2. shows video signals (color bars) used in adjusting the video section.

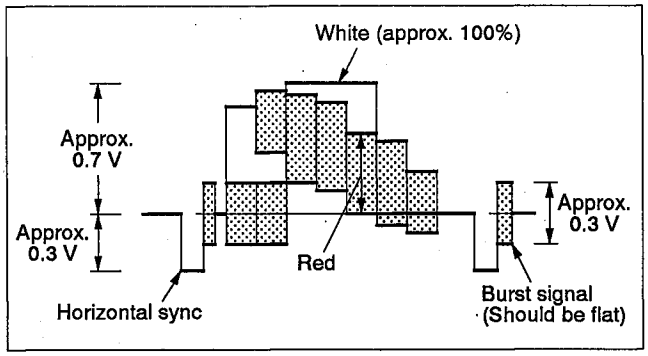


Fig. 7-2-2.

2-1-4. Alignment Tapes

[Alignment Tape (MH-1)]

	Mode	Time	Video signal	Audio signal
1	SP	Ten minutes	Stair-step	7 kHz
2		Five minutes	—	3 kHz
3		Ten minutes	Color	1 kHz
4		Three minutes	RF	—

[Hi-Fi Alignment Tape]

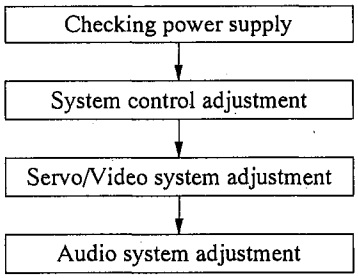
	Mode	Time	Video signal	Audio signal
1	SP	Six minutes	Monaural scope	Nomal: no signal
				HIFI: 400 Hz

2-1-5. Specified I/O Level and Impedance Input/Output Terminal

Video inputs	LINE IN : phono jacks 1 Vp-p, 75 Ω , unbalanced, sync negative
Audio inputs	LINE IN : phono jacks 47 kΩ , − 7.5 dBs (0 dBs = 0.775 Vrms) More than 10 kΩ , − 4 dBs
Video outputs	LINE OUT : phono jack 1 Vp-p, 75 Ω , unbalanced, sync negative
Audio outputs	LINE OUT : phono jack − 7.5 dBs at load impedance 47 kΩ Output impedance : less than 10 kΩ

2-1-6. Adjusting Sequence

Make the electrical adjustment in the following sequence.



2-2. POWER SUPPLY CHECK (PT-95 BOARD)

Mode	E-E
Measuring Instrument	Digital voltmater
UNSW 5.0 V check	
Measurement Point	Pin ⑩ of CN401
Specified Value	5.3 ± 0.2 Vdc
MTR 12 V check	
Measurement Point	Pin ⑤ of CN402
Specified Value	12.4 ± 0.5 Vdc
DC 42 V check	
Measurement Point	C187 ⊕ side
Specified Value	42.0 ± 3.0 Vdc
UNSW − 8 V check	
Measurement Point	Pin ⑨ of CN401
Specified Value	− 9.1 ± 0.8 Vdc
AN 12 V check	
Measurement Point	Pin ⑧ of CN401
Specified Value	12.0 ± 0.3 Vdc
SW 9 V check	
Measurement Point	Pin ⑮ of CN401
Specified Value	9.0 ± 0.3 Vdc

Checking Method:

1) Confirm that each voltage meets its specified value.

2-3. SYSTEM CONTROL ADJUSTMENT

2-3-1. Clock Adjustment (PT-95 Board)

Purpose:

Adjust to improve the clock precision. When it is out of order, errors gradually increases.

Measurement point	Pin ⑨⑨ of IC401
Measurement Equipment	Frequency counter (Interval counter mode)
Adjustment Element	CT412
Specified Value	0.1249995 ± 0.0000005 sec

Note: Do not adjustment CT412 except when replacing IC401.

Adjustment Method :

1) Connect Pin ⑨⑧ of IC401 to ground. (The set goes to adjusting mode.)
2) Connect the frequency counter as shown below.
3) Set oscillation frequency to the specified value using CT412.

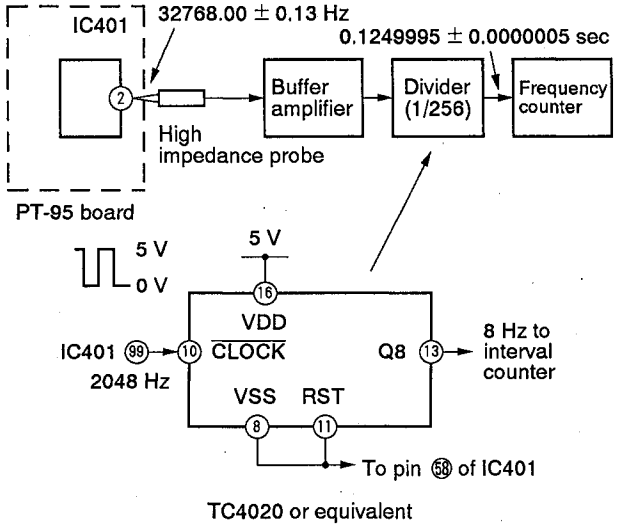


Fig. 7-2-3.

Adjusting Mode Setting:

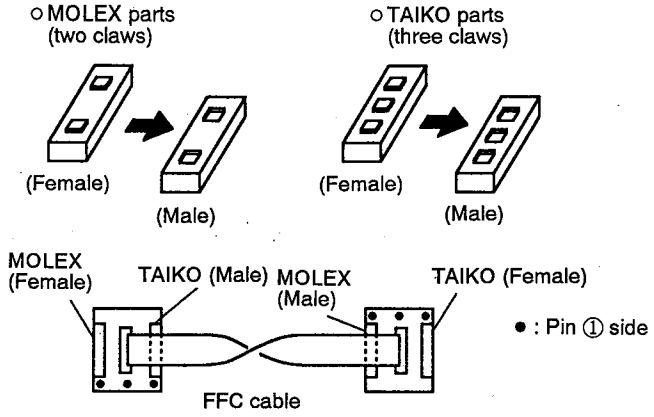
- Connect 47 kΩ resistor between Pin ⑪ of CN403 and ground. (The set goes to Adjusting mode.)
- After adjusting, be sure to remove resistor.

2-4. SERVO/VIDEO SYSTEM ADJUSTMENTS

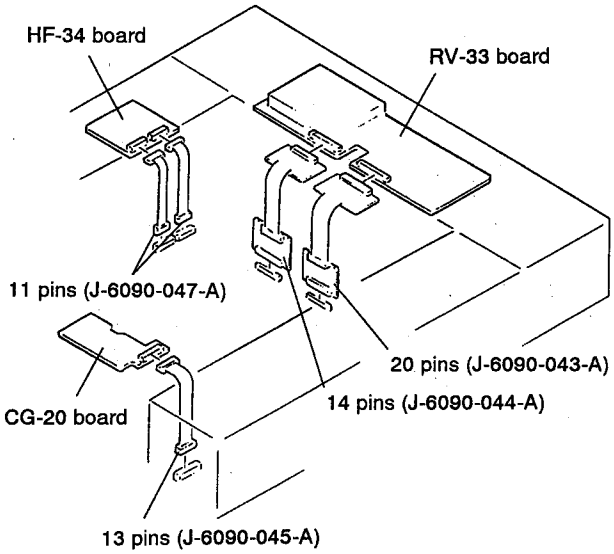
- **NOTE ON REPAIRING RV-33 BOARD**

[Servicing Jig]
MA-181 ↔ RV-33 Exension cable.
ⓐ 14 pins (J-6090-044-A) CN001 ↔ CN303
ⓑ 20 pins (J-6090-043-A) CN002 ↔ CN304

① There are two types of the connectors between MA-181 and RV-33 boards according to the manufacturing companies (TAIKO or MOLEX). They are not interchangeable.
② Servicing jigs are for common use.
When using it, please be sure to confirm the form of connectors.



- EXTENSION CABLE USING LOCATION
(See page 7-1 for details of extension cables.)



2-4-1. Switching Position Adjustment (MA-181 Board)

Purpose:

Adjust the interval between A ch and B ch of tape playback output.
Improve the interchangeability with other tapes and sets.
When it is out of order, the interval appears on the screen, the screen is disturbed.

Mode	PB
Signal	Alignment tape (HiFi 400 Hz)
Measurement Point	CH1: CJ702 VIDEO LINE OUT (IO-49 board) CH2: Pin ⑳ of CN304 (RF SWP)
Measuring Instrument	Oscilloscope
Adjusting Element	RV202
Specified Value	6.5 ± 0.5 H (410 ± 32 μsec)

Adjusting Method:

1) Adjust the tracking position to the center by pushing tracking buttons ▲, ▼ (on remote commander).
2) Check that switching position is 6.5 ± 0.5 H.
(410 ± 32 μsec)
If not meet the specified value, turn RV202 and repeat steps 1) to 2).

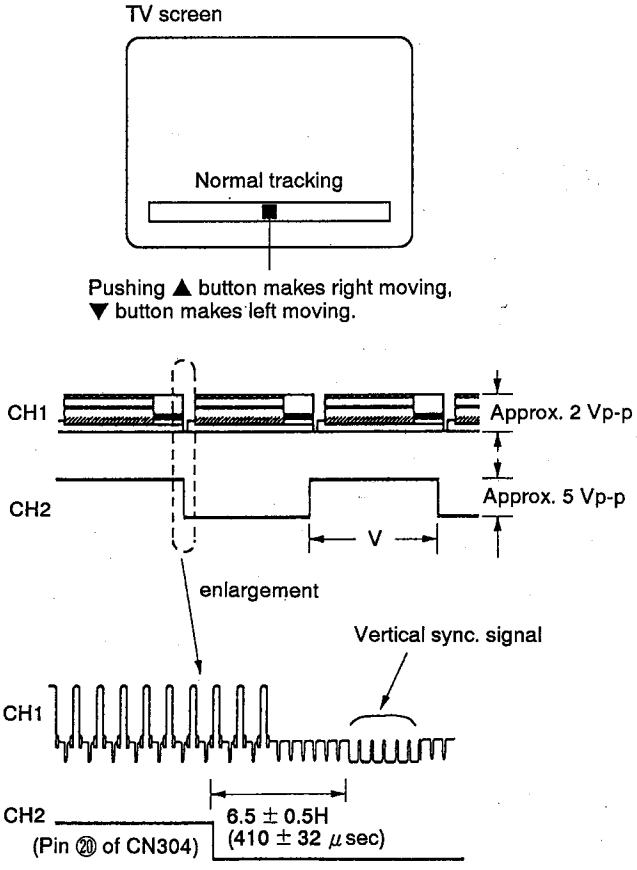


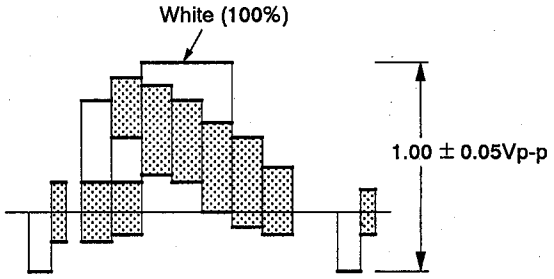
Fig. 7-2-4.

2-4-2. Sync. AGC Adjustment (RV-33 Board)

Mode	E-E
Signal	Color bar
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Oscilloscope
Adjusting Element	RV001
Specified Value	1.00 ± 0.05Vp-p

Adjusting Method:

1) Adjust to 1.00 ± 0.05Vp-p with RV001.



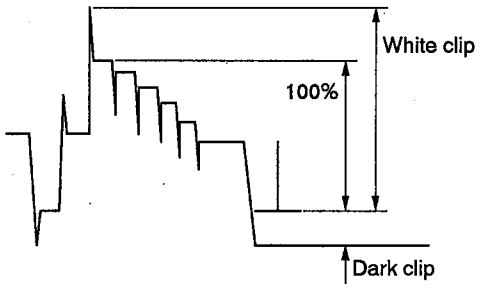
2-4-3. White Clip Adjustment (RV-33 Board)

Purpose:

Adjust the frequency of FM modulated YFM signal doesn't go too high.

When it is out of order, white goes flat and black is over-modulated.

Signal	Clor bar
Measurement Point	Pin ㊺ of IC001
Measuring Instrument	Oscilloscope
Adjusting Element	RV004
Specified Value	White clip and dark clip are equal to the reference waveform.



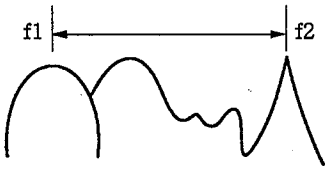
2-4-4. Carrier Deviation Adjustment (RV-33 Board)

Purpose:

Adjust FM modulating frequency for signal.

When it is out of order, black and white are over-modulated, interchangeability is lack, the screen is darkened or brightened or off.

Mode	E-E
Signal	Color bar
Measurement Point	Q034 Emitter
Measuring Instrument	Oscilloscope
Adjusting Element	RV005, 006 Alternately
Specified Value	$f_2 - f_1$=1.0 ± 0.05 MHz f_1=3.45 ± 0.05 MHz



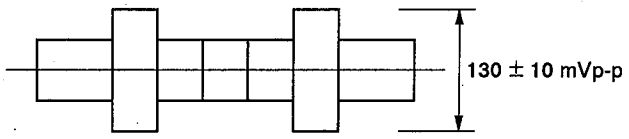
2-4-5. Recording Chroma Adjustment (RV-33 Board)

Purpose:

Adjust recording chroma level.

When it is out of order, S/N ratio of color goes bad, the picture is not colored and second sequence beat appears.

Mode	E-E
Signal	Color bar
Measurement Point	Q013 Emitter
Measuring Instrument	Oscilloscope
Adjusting Element	RV009
Specified Value	130 ± 10 mVp-p



Reference:

Adjusting level is low; Bad color S/N ratio, not colored.

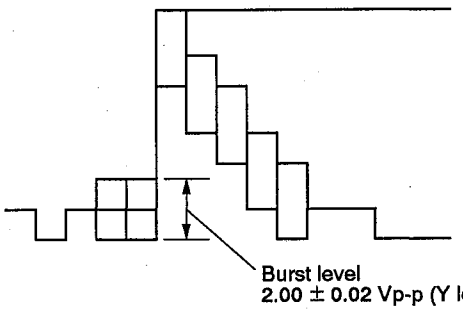
Adjusting level is high; Second sequence beat (squared noise) appears.

2-4-6. Playback Level Adjustment (RV-33 Board)

Purpose:

Adjust playback video signal level to the specification.
When it is out of order, the picture is darkened or brightened on TV screen. White goes flat.

Mode	Playback
Signal	Color bar or alignment tape
Measurement Point	VIDEO LINE OUT
Measuring Instrument	Oscilloscope
Adjusting Element	RV003
Specified Value	2.0 ± 0.02 Vp-p



Reference:

Adjusting level is low; The picture is darkened on TV screen.
Adjusting level is high; The picture is brightened on TV screen. White goes flat.

2-4-7. VCO Adjustment (RV-33 Board)

Purpose:

Adjust to lock the color surely.
When it is out of order, the picture doesn't colored.

Mode	PB
Signal	Color bar
Measurement Point	Pin ㊺ of IC001
Measuring Instrument	Digital voltmeter
Adjusting Element	T001
Specified Value	2.5 ± 0.1 Vdc

2-5. AUDIO SYSTEM ADJUSTMENTS

- Adjust both Lch and Rch.

[Connection]

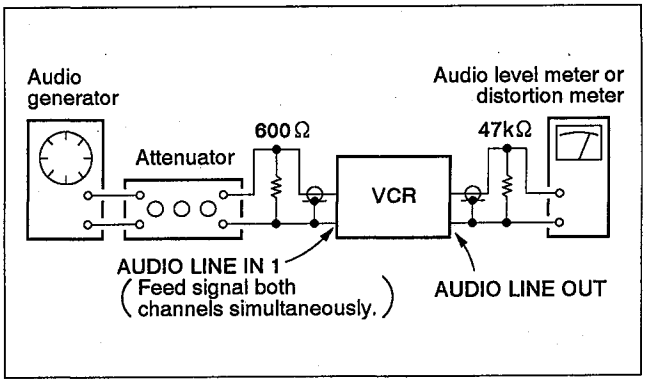


Fig. 7-2-5.

2-5-1. HI-FI Audio System Adjustment

- Set switches and knobs to the following positions to make adjustment unless otherwise specified.
  INPUT SELECT switch ····· LINE 1
  AUDIO MONITOR ····· STEREO

[Adjusting Sequence]

1. VCO fo adjustment
2. Deviation check
3. BPF fo adjustment
4. AF switching position

1. VCO fo Adjustment (HF-34 Board)

Purpose:

Adjust to have interchangeability in HiFi audio.
When it is out of order, the sound is distorted.

Mode	REC
Signal	No signal
Measuring Instrument	Frequency counter
1.3 MHz Adjustment	
Measurement Point	Pin ⑲ of IC101
Adjusting Element	RV103 (L CH)
Specified Value	1.3 MHz ± 1 kHz
1.7 MHz Adjustment	
Measurement Point	Pin ㉚ of IC101
Adjusting Element	RV102 (R CH)
Specified Value	1.7 MHz ± 1 kHz

Note: Connect the frequency counter through a probe of high input impedance (more than 1 MΩ) and low capacity (10 pF or less).

Adjusting Method:

1) Connect the frequency counter to each measurement point.
2) Adjust each volume so that each frequency meets its specified value.

2. Deviation Check (HF-34 Board)

Purpose:

Set the HiFi audio signal level to specified value.
Adjust to have interchangeability with other tapes and sets.
When it is out of order, the volume of sound is different on playback.

Mode	REC
Signal	Pins ①, ③ 400 Hz − 12 dBs
Measurement Point	IC101 L CH Pin ⑲ R CH Pin ㉚
Measurement Equipment	Frequency counter
Specified Value	50 ± 5 kHz

3. BPF fo Adjustment (HF-34 Board)

Purpose:

Adjust to separate carrier component precisely and to operate normally the filter for cutting video signal.
When it is out of order, the sound is distorted.

Mode	PB
Signal	1.505 MHz Input 200 mVp-p : Pin ① of CN103
Measurement Point	Pin ⑲ of IC101 Pin ㉚ of IC101
Measuring Instrument	Oscilloscope
Adjusting Element	RV101

Connection:

1) Remove HF-34 board from CN103, and feed 1.505 MHz, 200 mVp-p sine wave to Pin ① of CN103.

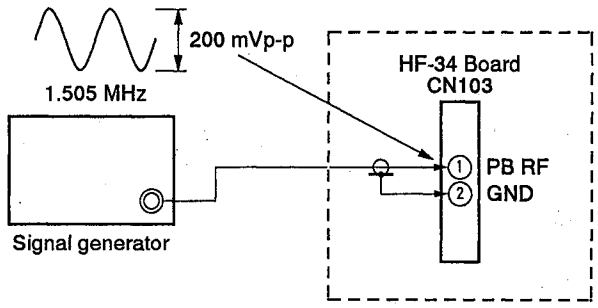


Fig. 7-2-6.

Adjusting method:

1) Turn RV101 counterclockwise seen from the component side.
2) Turn RV101 clockwise gradually and stop turning when the level Ⓐ becomes equal to the level Ⓑ.

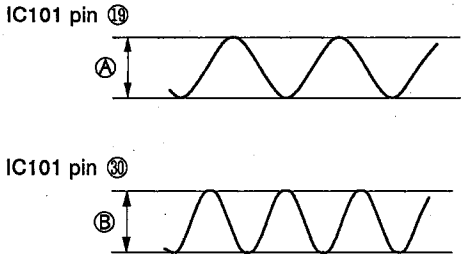


Fig. 7-2-7.

4. AF Switching Position Adjustment (MA-181 Board)

Adjust the interval between A CH and B CH of tape playback output. Improve the interchangeability with other tapes and sets.
When it is out of order, noisy sound is increased and big noise is heard.

Mode	PB
Signal	Alignment tape (HiFi 400 Hz)
Measurement Point	CH1: See Fig. 7-2-8 (HF-34 Board) CH2: Pin ③ of CN802 (RV-33 Board)
Measuring Instrument	Oscilloscope
Adjusting Element	RV201
Specified Value	Fig. 7-2-9

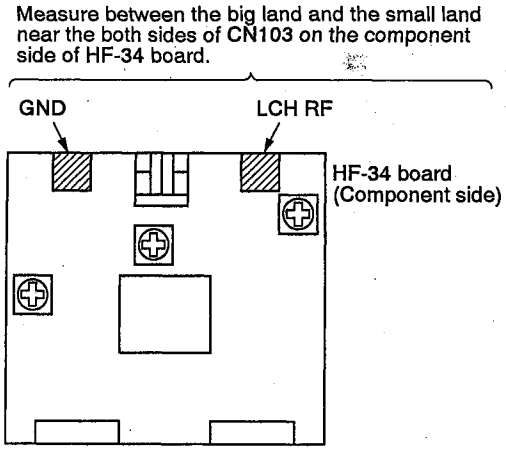

Measure between the big land and the small land near the both sides of CN103 on the component side of HF-34 board.
GND
LCH RF
HF-34 board
(Component side)

Fig. 7-2-8.

Adjusting method:

1) Adjust the tracking position to the center by pushing tracking buttons ▲, ▼ (on remote commander). (Auto tracking: OFF)
2) Adjust RV201 to minimize dropout.

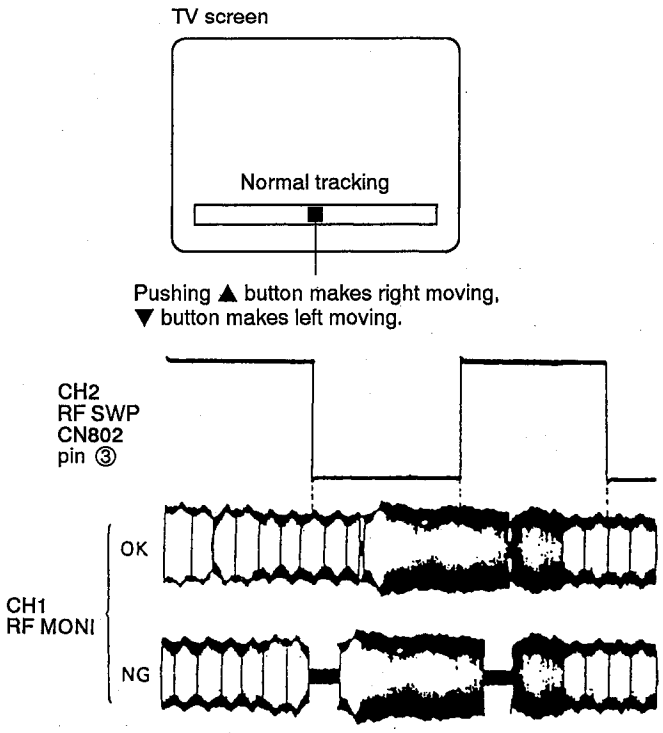


Fig. 7-2-9.

2-5-2. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Set AUDIO MONITOR to normal.

1. ACE Head Adjustment

Refer to the service manual of VHS MECHANICAL ADJUSTMENT Ⅱ.

2. Recording Bias Adjustment (MA-181 Board) (SLV-920HF)

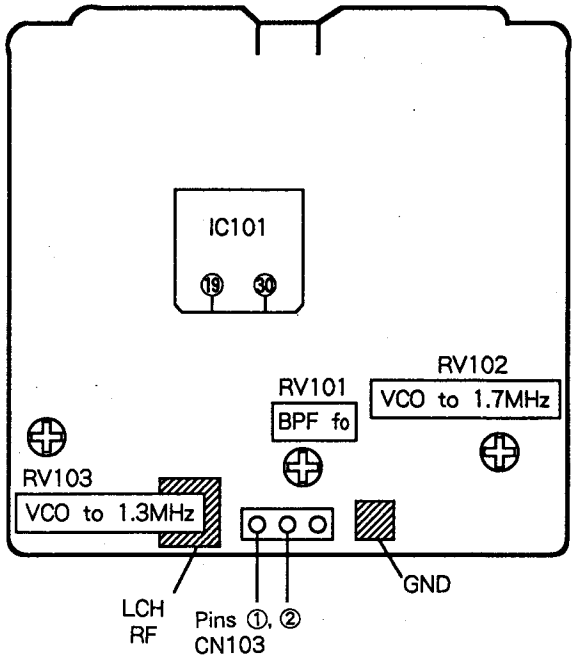
Mode	REC and PB
Signal	400 Hz, − 27.5 dBs 7 kHz, − 27.5 dBs
Measurement Point	AUDIO LINE OUT L or R
Measuring Instrument	Audio level meter
Adjusting Element	RV851
Specified Value	0 ± 1 dB

Adjusting Method:

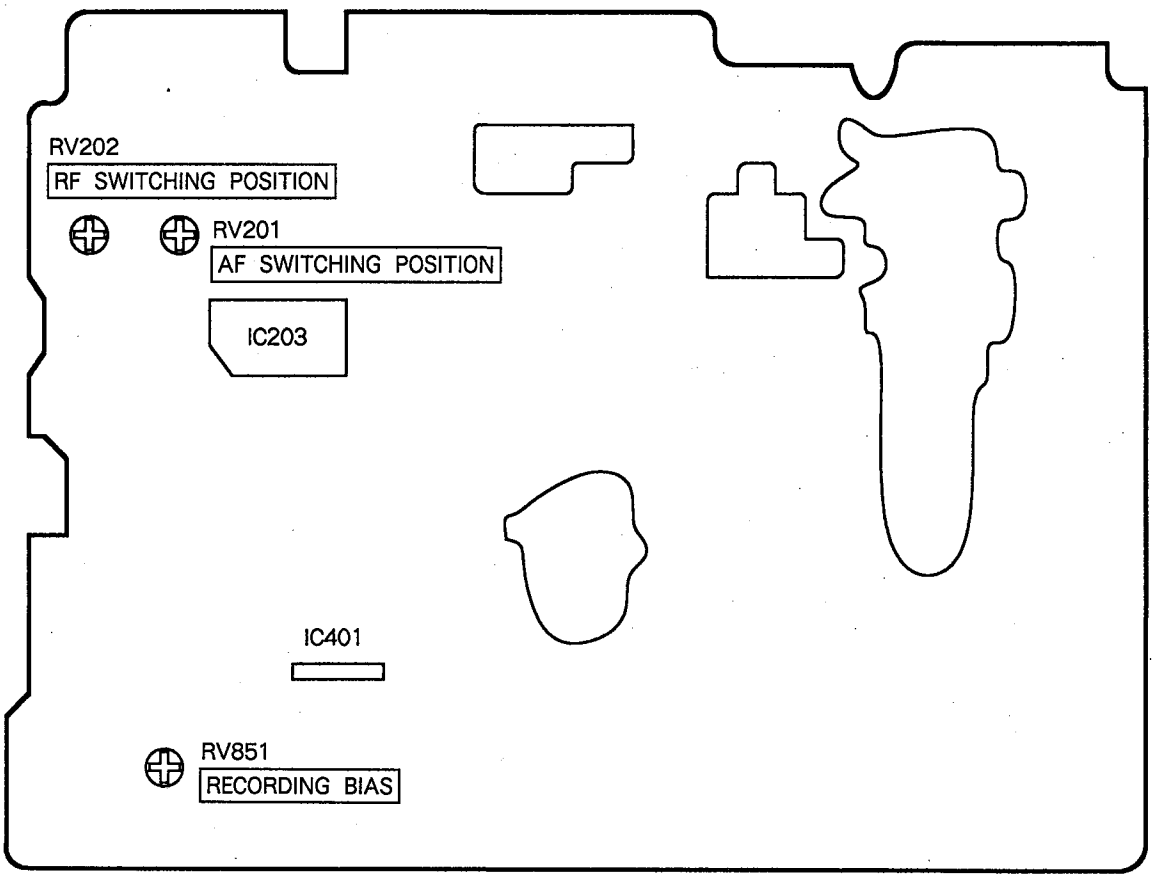
1) Supply a signal of 400 Hz, − 27.5 dBs to Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate − 27.5 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
7) Confirm that the 7 kHz playback output levels within a range of the 400 Hz playback output level 0 ± 1 dB. When it is out of this range, sdjust RV851 and repeat the steps 1) through 7) above.

2-6. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

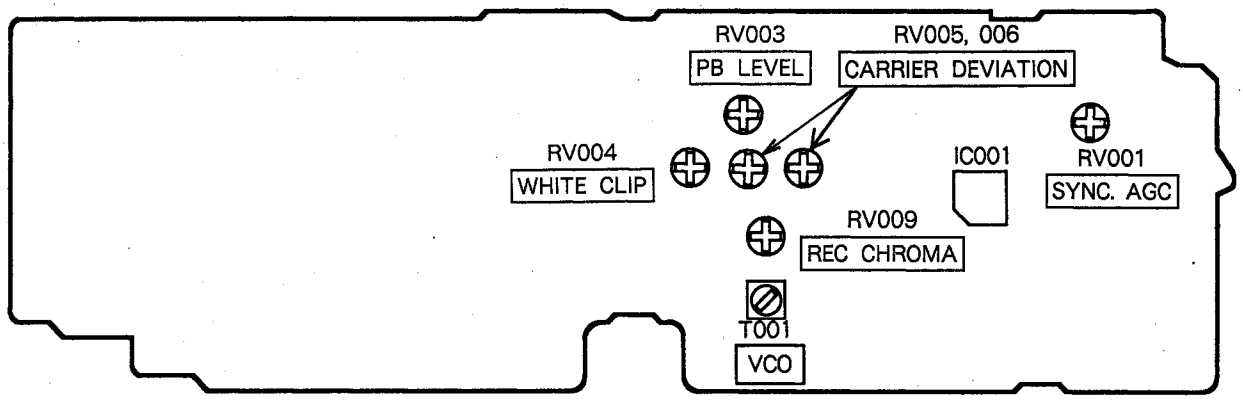
HF-34 BOARD (COMPONENT SIDE)



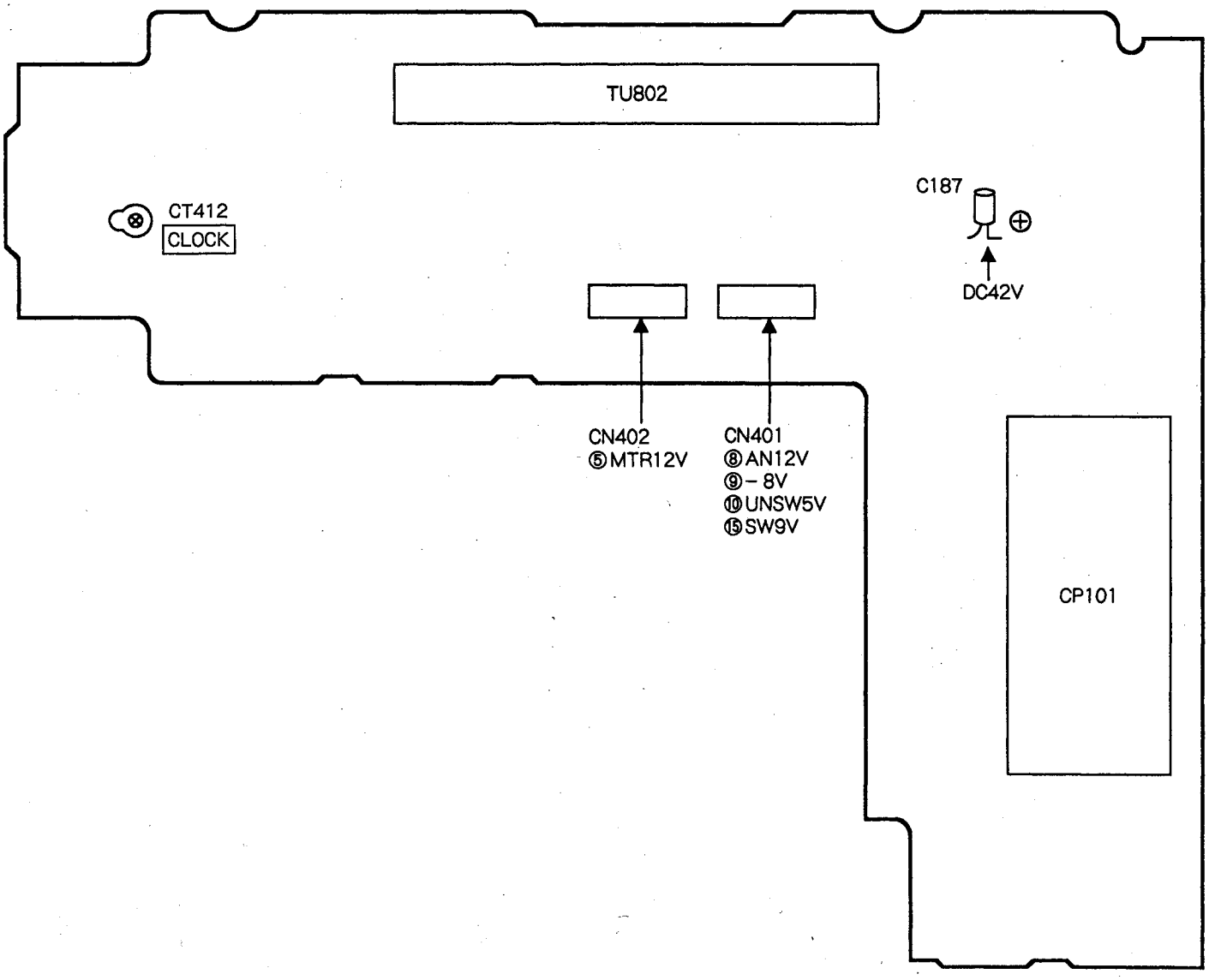
MA-181 BOARD (COMPONENT SIDE)



RV-33 BOARD (COMPONENT SIDE)



PT-95 BOARD (COMPONENT SIDE)



Hookup 5

Incompatible cable box with few scrambled channels, using an A/B switch (continued)

You are now ready to use your VCR

To play a tape

1 Set the TV to channel 3 or 4 (or to video input, if you have made A/V connections).
2 Insert a cassette and press ▷ PLAY.

To record an unscrambled channel

1 Set the A/B switch to "A."
2 Press VCR Plus+ on the remote commander.
3 Enter the program's PlusCode number.
4 Press ONCE, DAILY, or WEEKLY.
5 Insert a cassette.
6 Press POWER to turn the VCR off.

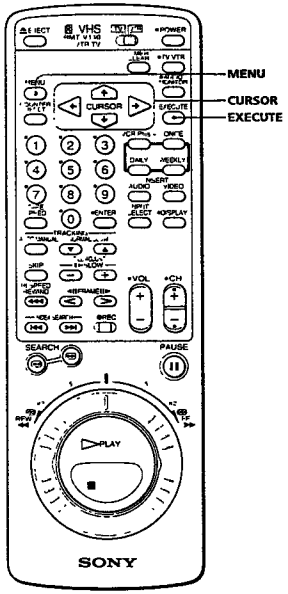
To record a scrambled channel

1 Set the A/B switch to "B."
2 Turn on the cable box.
3 Set the cable box to the channel you want to record.
4 Press VCR Plus+ on the remote commander.
5 Enter the program's PlusCode number.
6 Press ONCE, DAILY, or WEEKLY.
7 Insert a cassette.
8 Press POWER to turn the VCR off.
9 Leave the cable box on.

To watch TV

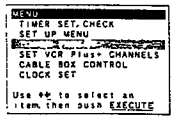
1 Turn off your VCR, or press the VCR's TV/VTR button until the VTR indicator in the display window goes off.
2 Set the A/B switch to "B."
3 Turn on your cable box.
4 Set the TV to the cable box output channel (usually 2, 3, or 4).
5 Set the cable box to the channel you want to watch.

Selecting the language *(Canadian model only)*

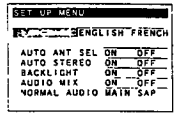


If you prefer French to English, you can change the on-screen language.

1 **Press MENU.**
The main MENU appears on the TV screen.



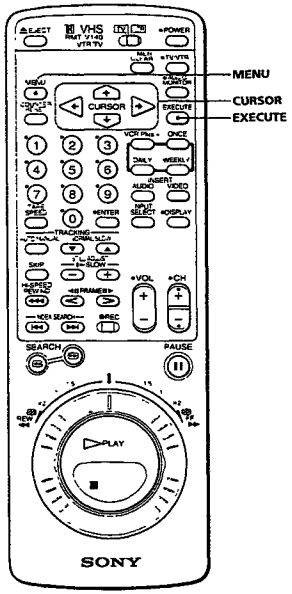
2 **Press CURSOR ↑/↓ to move the cursor (▮) to SET UP MENU, then press EXECUTE.**
The SET UP MENU appears on the TV screen.



3 **Press CURSOR ↑/↓ to move the cursor (▮) to LANGUAGE.**

4 **Press CURSOR ←/→ to select ENGLISH or FRENCH, then press EXECUTE.**

Setting the clock



Note

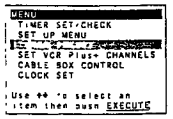
- The menu disappears automatically if you don't proceed for more than one minute.
- The clock cannot be set automatically if you don't receive a channel that carries a time signal in your area. If so, set the clock manually
- If there are only a few channels in your area that carry time signals, setting the clock automatically may take several minutes. If nothing happens even after you wait several minutes, set the clock manually.

Set the time and date to use the timer feature for recording programs.

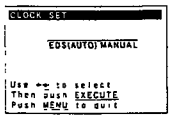
Using the Auto Clock Set feature

Some TV and cable channels are beginning to transmit time signals with their broadcasts (this is called Extended Data Services – EDS). Your VCR can use this time signal to automatically set the clock. After you complete the steps below, when you turn off the VCR, it will automatically look for a channel that carries a time signal and set the clock. The Auto Clock Set feature only works if a channel in your area is broadcasting a time signal. Use the manual method until broadcasters in your area start sending time signals.

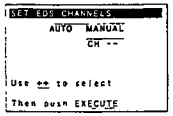
1 **Press MENU.**
The main MENU appears on the TV screen.



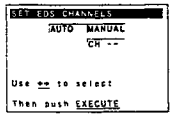
2 **Press CURSOR ↑/↓ to move the cursor (▮) to CLOCK SET, then press EXECUTE.**
The CLOCK SET menu appears on the TV screen.



3 **Press CURSOR ←/→ to select EDS (AUTO), then press EXECUTE.**
The SET EDS CHANNEL menu appears on the TV screen.



4 **Press CURSOR ←/→ to select AUTO or MANUAL.**
If you set to AUTO:
The VCR automatically searches for a channel that carries a time signal. (Use this method if you don't know of a channel that carries a time signal.)



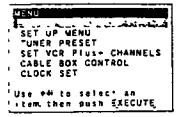
If you set to MANUAL:
Set a channel that carries a time signal by using the number buttons. Use this method if you do know of a channel that carries a time signal.

5 **Press EXCUTE.**

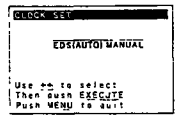
6 **To activate the Auto Clock Set function, turn the VCR off.**
The VCR automatically adjusts the clock by scanning for a channel that carries a time signal.

Using the manual method

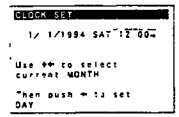
1 **Press MENU.**
The main MENU appears on the TV screen.



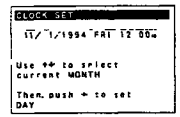
2 **Press CURSOR ↑/↓ to move the cursor (▮) to CLOCK SET, then press EXECUTE.**
The CLOCK SET menu appears on the TV screen.



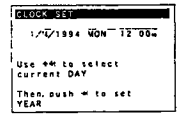
3 **Press CURSOR ←/→ to select MANUAL, then press EXECUTE.**
The CLOCK SET menu appears on the TV screen and the month is highlighted.



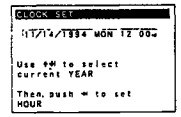
4 **Set the month using CURSOR ↑/↓.**



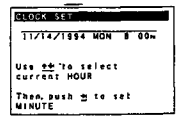
5 **Press CURSOR → to highlight the day. Set the day using CURSOR ↑/↓.**
The day of the week is set automatically.



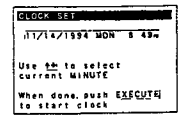
6 **Press CURSOR → to highlight the year. Set the year using CURSOR ↑/↓.**



7 **Press CURSOR → to highlight the hour. Set the hour using CURSOR ↑/↓.**



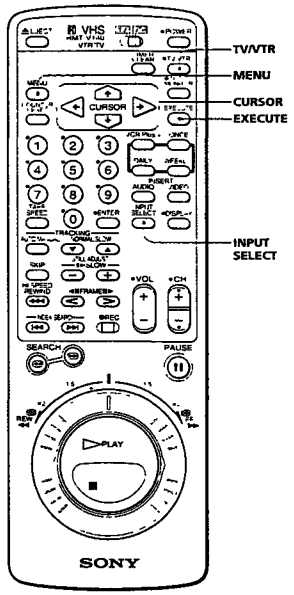
8 **Press CURSOR → to highlight the minutes. Set the minutes using CURSOR ↑/↓.**



9 **Press EXECUTE to start the clock.**

Presetting channels

(Skip this section if you are using cable box control.)



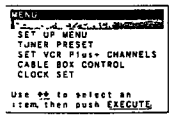
This VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and unscrambled CATV channels 1 to 125. First, we recommend that you preset the receivable channels in your area using automatic presetting. Then, if there are any unwanted channels, disable them manually. If you have decided which channels you wish to preset, set them directly using manual presetting.

Before you start...

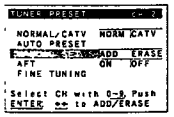
- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VTR to display the VTR indicator in the VCR's display window.
- Press INPUT SELECT so that a channel number appears in the VCR's display window.

Presetting all receivable channels automatically

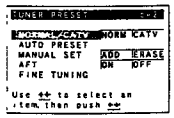
1 **Press MENU.**
The main MENU appears on the TV screen.



2 **Press CURSOR ↑/↓ to move the cursor (▮) to TUNER PRESET, then press EXECUTE.**
The TUNER PRESET menu appears on the TV screen.

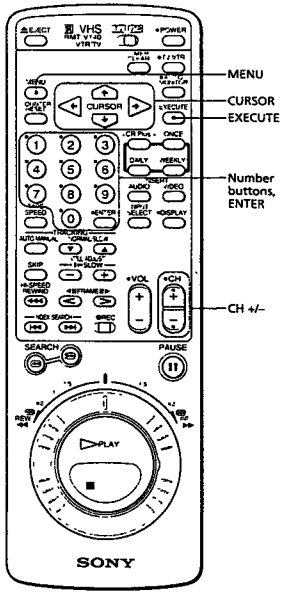


3 **Press CURSOR ↑/↓ to move the cursor (▮) to NORMAL/CATV.**

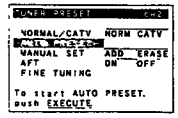


4 **Select NORM or CATV using CURSOR ←/→:**

- To preset cable TV channels, select CATV.
- To preset VHF and UHF channels, select NORM.

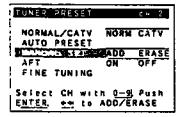


5 **Press CURSOR ↑/↓ to move the cursor (▮) to AUTO PRESET, then press EXECUTE.**
All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.



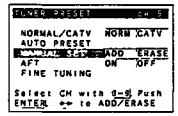
Presetting/disabling channels manually

1 **Display the TUNER PRESET menu.**
For instructions, follow steps **1** and **2** in "Presetting all receivable channels automatically."



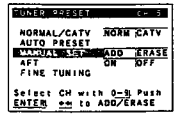
2 **Select the channel to preset or disable:**

- To preset a channel, enter the channel number by pressing the number buttons then ENTER.
- To disable a channel, select the channel number by pressing CH +/–.



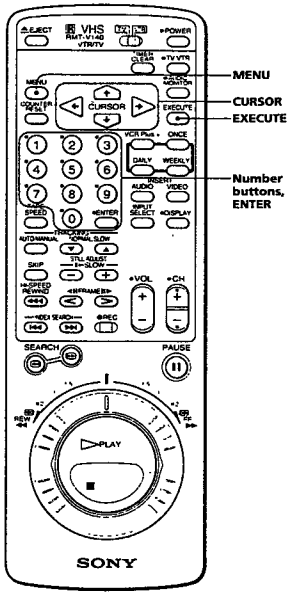
3 **Set MANUAL SET to ADD or ERASE, using CURSOR ↑/↓/←/→:**

- To preset a channel, select ADD.
- To disable a channel, select ERASE.



4 **Repeat steps 2 and 3 to preset or disable channels as required, then press EXECUTE.**

Presetting channels (continued)



Cable TV channel assignment

Cable TV systems use letters or numerals to designate channels. This VCR is designed to correspond with standard cable systems. The chart below shows the channel numbers on this VCR and the corresponding cable TV channels. Note that the channel number assignment shown in the chart may not correspond to the channel number used by your local cable company. Check with your local cable TV company for more information on the available channels.

Number on this VCR	1	2	3	...	12	13	14	15	16	17
Cable TV channel	A-8	2	3	...	12	13	A	B	C	D

18	19	20	21	22	23	24	25	26	27	28	29	30	31
E	F	G	H	I	J	K	L	M	N	O	P	Q	R

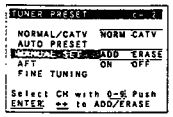
32	33	34	35	36	37	38	...	93	94	95	96	97	98
S	T	U	V	W	W+1	W+2	...	W+57	W+58	A-5	A-4	A-3	A-2

99	100	101	...	124	125
A-1	W+59	W+60	...	W+83	W+84

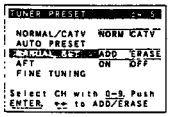
If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture of a channel is not clear, you may also use the manual tuning function.

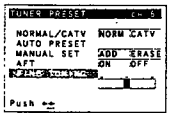
1 **Display the TUNER PRESET menu.**
For instructions, follow steps 1 and 2 in "Presetting all receivable channels automatically."



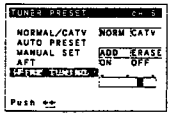
2 **Select the channel you want to fine-tune by pressing the number buttons and then ENTER.**



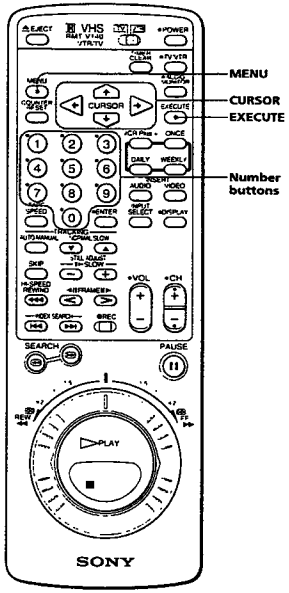
3 **Press CURSOR ↑/↓ to move the cursor (▮) to FINE TUNING.**
The fine tuning meter appears.



4 **Press CURSOR ←/→ to get a clearer picture, then press EXECUTE.**
Note that the AFT setting switches to OFF.



Setting up cable box control



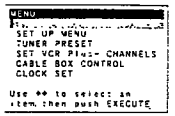
Note

- If you have connected your VCR and the cable box using a LINE connection, the EDS function is cancelled.

Your VCR includes a cable box control feature which allows the VCR to control most brands of cable boxes via the cable mouse. With cable box control, the VCR controls channels on the cable box for timer recording. You can also use the VCR's remote commander to change channels on the cable box whenever the cable box is turned on. To use cable box control, you need to connect the cable mouse (page **10**) and set the code number and output channel.

This VCR is programmed with codes necessary to control channel selection on most brands of cable boxes at the time this VCR was manufactured. It is possible that new cable boxes may be introduced that cannot be controlled with this VCR's cable mouse. If you have a cable box that is incompatible with this VCR, contact your cable operator — they may be able to provide you with a compatible cable box.

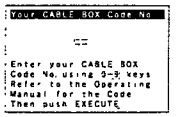
1 **Press MENU.**
The main MENU appears on the TV screen.



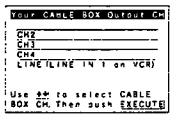
2 **Press CURSOR ↑/↓ to move the cursor (▮) to CABLE BOX CONTROL, then press EXECUTE.**
The CABLE BOX CONTROL menu appears.

3 **Press CURSOR ←/→ to select ON, then press EXECUTE.**

4 **Enter the cable box code number by pressing the number buttons, then press EXECUTE.**
Find your cable box code number from the chart on page **28**.


Your CABLE BOX Code No.
Enter your CABLE BOX Code No. using 0-9 keys
Refer to the Operating Manual for the Code
Then push EXECUTE

5 **Select the cable box output channel using CURSOR ↑/↓, then press EXECUTE.**



Setting up cable box control (continued)

Compatible cable boxes and their code numbers

Cable box brand	Code number Primary use	Code number Secondary use
Drake		38
Eastern		20
Gemini		28
Hamlin/Regal	14, 15, 43	16
Jerrold/GI	1, 2, 3, 4	10, 11, 30, 31, 32
Macom		26, 37
Magnavox		36
Oak	17, 18	19
Panasonic	12, 13	
Philips	22	21, 23, 24
Pioneer	8, 9	
RCA		25
Regency	20	
Scientific Atlanta	5, 6	
Texscan		27
Tocom	10, 11	
Toshiba		35
Unika		41
United Cable		3
United Satellite		42
Video Tech		39
Videoway		40
Viewstar		22, 23
Zenith	7	33, 34

The VCR contains 43 cable box code numbers (1 to 43). If your cable box is not listed above, you may try one of the other codes.

To check the cable box control setting

1 Press CH +/– on the remote commander. Does the channel indicator on the cable box change? (Point the remote commander at the VCR, not at the cable box.)
2 Press all 10 number buttons (0 to 9) on the remote commander. Does the channel indicator on the cable box change?

If the answer to both 1 and 2 is "yes," you have made the correct setting.

If you cannot get your VCR to control the cable box

✓ Check the position of the cable mouse.

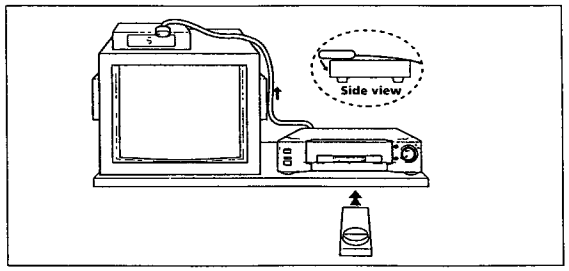
✓ Place the cable box and VCR away from each other. Do not place the cable box on top of the VCR.

✓ Try the setup again making sure to use the correct control code. If the cable box still does not respond you can try other codes.

If your cable box still does not operate with the cable mouse, contact your cable company to see if they can provide you with a compatible cable box.

1-14

Tips for normal viewing



- Place the cable mouse so that it hangs out over the cable box front.
- Point the remote commander at the VCR, not at the cable box.

Setting up VCR Plus+

Example of "PlusCode"

PlusCode

5:30 14 MOVIE – Musical (2hrs.) 33044
2 SPORTS – Golf (1hr. 25min.) 42060
CNN – WS 9974
6:30 2 3 4 DRAMA – Comedy (2hrs.) 17390
5 SCIENCE AND TECHNOLOGY (1hr. 15min.) 73457

Example of "Channel Line-up Chart"

CABLE TV	Guide channel number
A&E Arts & Entertainment Network	39
AMC American Movie Classics	35
BRV Bravo (program grid only)	54
CNN Cable News Network	42
CSP C-SPAN	28
DIS The Disney Channel	53
DSC The Discovery Channel	37
ESN ESPN	34
FAM The Family Channel	47
HBO Home Box Office	33
LIF Lifetime	46
MAX Cinemax	45
MSG Madison Square Gardens Network	19
MTV Music Television	48
NIK Nickelodeon	38
SC Sports Channel	59
SCA Sports Channel America	70
SHO Showtime	41
TBS TBS SuperStation	43
TMC The Movie Channel	58
TNN The Nashville Network	49
TNT Turner Network Television	52
USA USA Network	44

VCR Plus+ is a feature in Sony VCRs that simplifies the task of programming the VCR to make timer recordings.

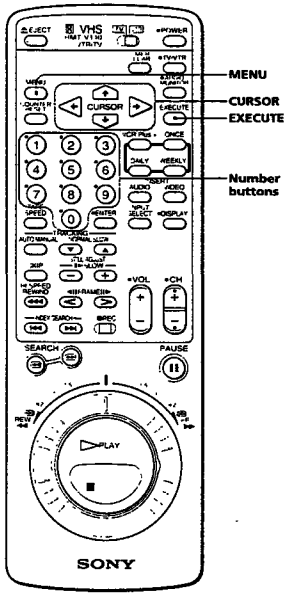
How VCR Plus+ works

Whenever you want to record a TV program, all you need to do is look up the program's "PlusCode," a number assigned to each program that's published in the TV section of most newspapers, cable TV listings, and even *TV GUIDE* magazine. Then, just enter the PlusCode of the program you want and the VCR is automatically programmed to record that show. It's that simple. With VCR Plus+, you no longer have to go through a lengthy and often repetitive procedure when you set start and stop times, channel numbers, and dates. All this information is automatically sent to your VCR when you enter the program's PlusCode.

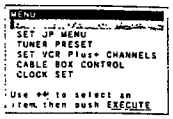
How to set up your VCR

Setting up your VCR involves coordinating the TV channel number (the number you turn to on your TV or VCR to watch a program) with the guide channel (the number that's assigned to that channel in your program guide). To get the guide channel numbers, find the "Channel Line-up Chart" in the program guide for your area that features VCR PlusCodes. It usually looks like the example to the left.

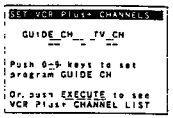
For each channel your VCR receives, use the Channel Line-up Chart to check that the channel numbers match. For example, if HBO is listed in the Channel Line-up Chart on channel 33, and your VCR receives HBO on channel 15, you need to coordinate these numbers using the following procedure. For channels in which the numbers are the same (for example, if your VCR receives HBO on channel 33, and the guide channel number is 33), you can skip this procedure.



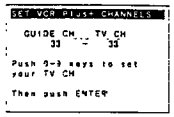
1 **Press MENU.**
The main MENU appears on the TV screen.



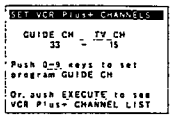
2 **Press CURSOR ↑/↓ to move the cursor (▮) to SET VCR Plus+ CHANNELS, then press EXECUTE.**
The SET VCR Plus+ CHANNELS menu appears and the GUIDE CH column is highlighted.

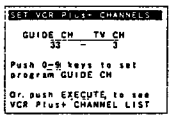


3 **Enter the channel number assigned in the program guide and press ENTER.**
The TV CH column is highlighted.



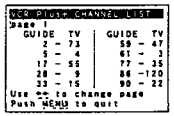
4
- **If you made Hookup 1, 2, or 3, enter the actual number on your TV (and VCR) and press ENTER.**
- **If you made Hookup 4, enter the cable box output channel (usually 2, 3, or 4) and press ENTER.**
- **If you have made Hookup 5, enter the actual number on your TV (and VCR) for an unscrambled channel and press ENTER. For a scrambled channel, enter the cable box output channel and press ENTER.**





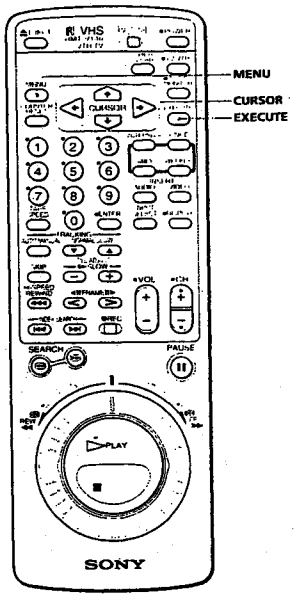
5 **Repeat steps 3 and 4 for each channel whose numbers don't match.**

6 **When you have set all channels, press EXECUTE to confirm your channel settings.**



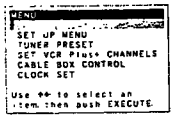
7 **When you've finished, press MENU to exit.**

Using the SET UP menu

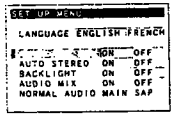


The SET UP menu allows you to make a number of optional setup choices. For a list of menu choices, see the following page.

1 **Press MENU.**
The main MENU appears on the TV screen.



2 **Press CURSOR ↑/↓ to move the cursor (▮) to SET UP MENU, then press EXECUTE.**
The SET UP MENU appears on the TV screen.



3 **Press CURSOR ↑/↓ to move the cursor (▮) to the desired menu choice.**

4 **Set the item to the desired setting using CURSOR ←/→.**

5 **Press EXECUTE to return to the original screen.**

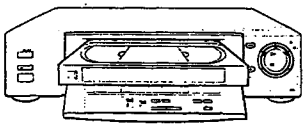
Tip
- See "How sound is recorded on a video tape" on page 35.

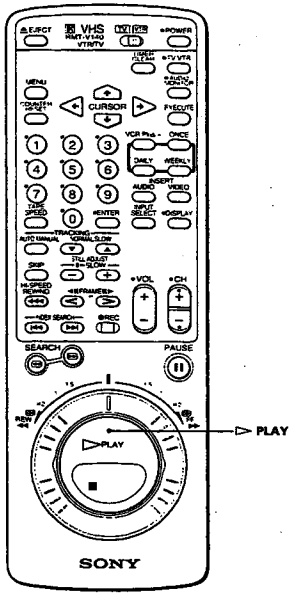
Menu choices
Initial settings are indicated in bold letters.

Menu option	Set this option to
LANGUAGE *(Canadian model only)*	**ENGLISH** or FRENCH to select the language of the on-screen menus.
AUTO ANT SEL	• **ON** if your TV is connected only to VHF/UHF OUT on the VCR. To play a tape, set the TV to the channel for video playback (channel 3 or 4). • OFF if your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR. To play a tape, set the TV to the VCR input.
AUTO STEREO	• **ON** to receive stereo programs. • OFF to reduce noise in a stereo program. Although the sound may improve, the sound becomes monaural. For details, see page **39**.
BACKLIGHT	• **ON** to turn on the LCD backlight. • OFF to turn it off.
AUDIO MIX	• ON to listen to the sound recorded on the hi-fi audio track and the normal audio track simultaneously. The AUDIO MONITOR button becomes inoperable. • **OFF** to select the sound using the AUDIO MONITOR button. For details, see page **36**.
NORMAL AUDIO	• **MAIN** to record the main sound on both the hi-fi and normal audio tracks. • SAP to record the SAP (Second Audio Program) sound on the normal audio track. The main sound is recorded on the hi-fi audio track. For details, see page **39**.

Basic Operations

Playing a tape





This section shows you how to play back a video tape.

1 Turn on your TV and tune in to the VCR:
- If the TV is connected to the VCR using the audio/video cable, set the TV to video input.
- If the TV is connected to the VCR using only the antenna, set the TV to the channel for the VCR.

2 Open the drop down panel and insert a tape.
The VCR turns on automatically. The tape starts playing automatically if its safety tab has been removed.

3 Press ▷ PLAY to start playing.
When the tape reaches the end, the VCR automatically rewinds it to the beginning. (The power remains on.)

Additional tasks

To	Press
Stop play	■ STOP
Pause play	❚❚ PAUSE
Resume play after pause	❚❚ PAUSE or ▷ PLAY
Search forward	Turn the DUAL MODE SHUTTLE (DMS) ring to ⏩ during playback
Search backward	Turn the DMS ring to ⏪ during playback
Fast-forward the tape	Turn the DMS ring to ▶▶ FF during stop
Rewind the tape	Turn the DMS ring to ◀◀ REW during stop
Rewind the tape at high speed	◀◀◀ HI-SPEED REWIND
Eject the tape	⏏ EJECT

Notes
- When you insert a tape with a short tape length such as T-20, T-30 or a non-standard commercially available tape, the remaining tape length may not be correct.
- The display will not appear during still mode or slow-motion playback.

Notes
- When a tape is reinserted, the counter returns to "0H00M00S."
- The counter will not work on tape portions with no recording.

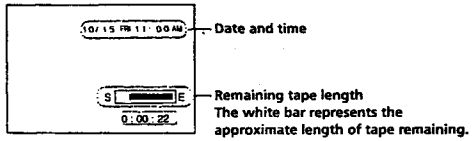
Notes
- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO MONITOR setting.
- To play a tape in stereo, you must use the A/V connection.
- If AUDIO MIX in the SET UP MENU is set to ON, the AUDIO MONITOR button doesn't work.

Tip
- For further information on searching and playback functions, see "Playing/searching at various speeds" on page 48.

Note
- Tapes recorded in LP mode can be played back on this VCR, while playback in modes other than normal forward speed is not guaranteed.

Displaying the time, remaining tape length and time counter

Press DISPLAY to turn the display on or off.



Time counter

Using the time counter

At the point on a tape that you want to find later, press COUNTER RESET to reset the counter to "0H00M00S." When you rewind or advance the tape to this point, refer to the counter.

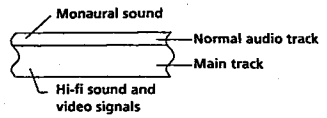
Playing stereo and bilingual programs

Press AUDIO MONITOR to select the desired sound. Each press of the button changes the display on the VCR and TV screen.

To listen to a		Press AUDIO MONITOR until	
Stereo tape	**Bilingual tape**	**The TV screen shows**	**The display window indicator shows**
Stereo	Left and right channels	"STEREO"	"STEREO"
Left channel	Left channel	"LCH"	"L"
Right channel	Right channel	"RCH"	"R"
Monaural on normal audio track	Sound on normal audio track (SAP)	No indication	No indication

How sound is recorded on a video tape

This VCR records sound onto two different tracks. High-fidelity sound (usually stereo) is recorded onto the main track along with the picture. Monaural sound is recorded onto the normal audio track along the edge of the tape.



1-17

Playing a tape (continued)

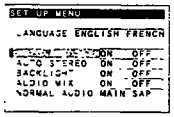
Tip
- See "How sound is recorded on a video tape" on page 35.

Note
- If AUDIO MIX remains ON, the AUDIO MONITOR button remains inoperative.

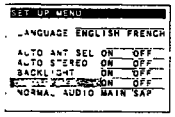
Listening to both audio tracks during playback

When playing an audio-inserted tape, you have a choice of listening sound. To listen to the sounds recorded on the hi-fi audio and normal audio tracks at the same time, use the SET UP MENU.

1 Press MENU and select SET UP MENU.

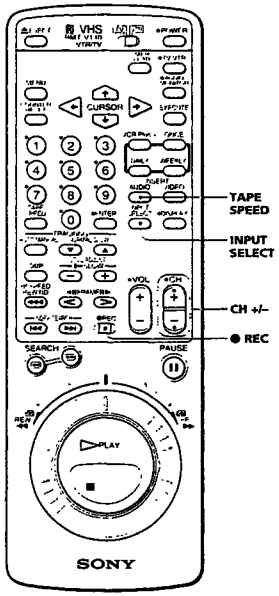


2 Set AUDIO MIX to ON using CURSOR ↑/↓/←/→.
The AUDIO MONITOR button becomes inoperative, and the sound you hear is mixed.



3 Press EXECUTE to store the setting.
After playing the audio-inserted tape, reset AUDIO MIX to OFF.

Recording TV programs



Note
- If you insert a tape with its safety tab removed, the VCR starts playing. To record on this tape, cover the tab hole on the cassette, or the VCR will eject it when you press ● REC.

Tip
- To select channels, you can also use the number buttons on the remote commander. Enter the desired channel number using the number buttons, then press ENTER.

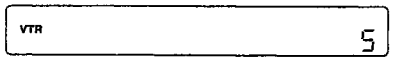
This section shows you how to record TV programs in the most basic way: manual recording. With manual recording, you start the VCR recording when the program begins, then stop it when the program ends. The VCR also provides the following ways of recording.
- Manually start recording, then stop it automatically—"Recording using the quick timer" (page 38)
- Automatically start and stop recording—"Recording TV programs using the timer" (page 41)
- Automatically start and stop recording just by entering the "Plus Code"—"Recording TV programs using VCR Plus+" (page 44)

1 Turn on your TV and tune in to the VCR:
- If the TV is connected to the VCR using the audio/video cable, set the TV to video input.
- If the TV is connected to the VCR using only the antenna, set the TV to the channel for the VCR.

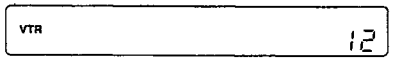
When using a cable box, turn it on.

2 Open the drop down panel and insert a tape with its safety tab in place.

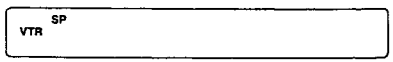
3 Press INPUT SELECT until a channel number appears in the VCR's display window.



4 Select the desired channel by pressing CH +/–.



5 Select the tape speed, SP (standard play) or EP (extended play), by pressing TAPE SPEED.
See "To select tape speeds" on the next page.



6 Start recording by pressing ● REC.
When the tape reaches the end, the VCR automatically rewinds it to the beginning.

1-18

Recording TV programs (continued)

Tips

- To cut out an unwanted scene while recording, press ❚❚ PAUSE, turn the DUAL MODE SHUTTLE ring on the VCR to rewind the tape to the beginning of the unwanted scene, then press ❚❚ PAUSE to resume recording.
- The display appears on the TV screen indicating information about the tape, but the information will not be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV. When using a cable box, make sure to leave it on.

Notes

- If your tape ends during quick-timer recording, recording stops and the VCR turns off. The tape does not rewind automatically.
- If a power interruption occurs during quick-timer recording, recording stops and your VCR turns off. If the interruption lasts less than three hours and the power is restored before the recording end time, recording will start again from that point.

To stop recording

Press ■ STOP.

To select tape speeds

When recording, select either SP (standard play) or EP (extended play). EP provides recording time three times as long as SP. However, SP provides better picture quality. You can mix SP and EP on the same tape. When playing back, the VCR automatically detects the tape speed. See the table below for the maximum recording/playback time in each speed.

Tape type	Maximum recording/playback time	
	SP	EP
T-160	2 hrs. 40 min.	8 hrs.
T-120	2 hrs.	6 hrs.
T-60	1 hr.	3 hrs.
T-30	30 min.	1 hr. 30 min.

Recording using the quick timer

The quick timer enables you to record for a specified period of time in intervals of 30 minutes. Once you specify the recording time, the VCR automatically stops recording. Before you begin, check that the clock is set correctly.

After you start recording, press QUICK TIMER until the desired duration appears in the display window. The TIMER indicator on the VCR lights up. Each press increases the recording duration in increments of 30 minutes as shown below.

0:00 → 0:30 → 1:00 ---- → 8:30 → 9:00 →

The recording duration decreases minute by minute to 0:00, then the VCR turns off automatically.

To stop recording

To stop while the VCR is recording a program, press ■ STOP to turn off the TIMER indicator on the VCR.

To extend the recording duration while recording

Press QUICK TIMER until the desired duration appears in the display window.

Tip

- For information on how the VCR records sound, see "How sound is recorded on a video tape" on page **35**.

Note

- Set NORMAL AUDIO to MAIN when not recording SAP sound, or no sound is recorded on the normal audio track. If no sound is recorded on the normal audio track and you play the tape on a mono VCR, you will see only video—no audio will be heard. However, you will receive both audio and video if you play back this tape on a stereo VCR.

Watching a TV program while recording another

You can watch a TV program and record another at the same time.

1 Press TV/VTR on the top right of the remote commander to turn off the VTR indicator in the display window.
2 If the TV is connected to the VCR using the audio/video cable, set the TV to TV input.
If the TV is connected to the VCR using only the antenna cable, skip this step.
3 Select the desired channel on the TV.

Recording stereo and SAP programs

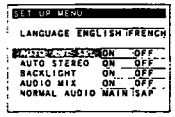
Stereo programs

This VCR automatically records stereo programs in stereo. When stereo programs are received, the STEREO indicator appears in the display window. If noise occurs while receiving a stereo program, record the program in monaural. Follow the steps below.

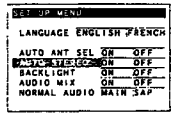
SAP programs

Normally, this VCR records main sound on both main and normal audio tracks. To record SAP (Second Audio Program) sound on normal audio track, follow the steps below.

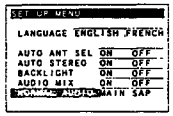
1 Press MENU and select SET UP MENU.



2 • To record stereo programs in monaural:
Set AUTO STEREO to OFF using CURSOR ↑/↓/←/→.



• To record SAP sound on normal audio track:
Set NORMAL AUDIO to SAP using CURSOR ↑/↓/←/→.



3 Press EXECUTE to store the setting.

1-19

To monitor SAP sound while recording

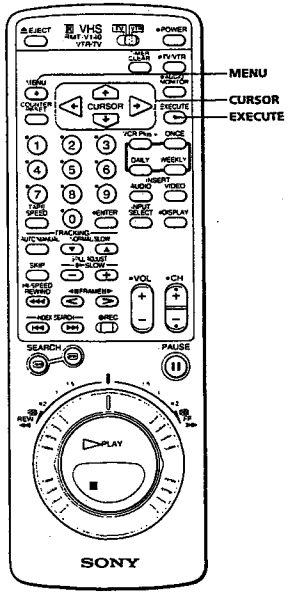
In the SET UP MENU, set NORMAL AUDIO to SAP. Then press EXECUTE. Press AUDIO MONITOR until the SAP indicator lights up in the display window.

Saving a recording

Video tapes have a safety tab to protect against accidental recording. To prevent accidental erasure of a recording, break off the safety tab with a screwdriver or other tool. A tape with its safety tab removed ejects if you try to record on it.

To record on a tape with its safety tab removed, cover the tab hole with adhesive tape.

Recording TV programs using the timer



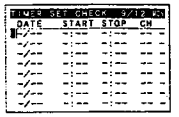
This section shows you how to let the VCR automatically start and stop recording TV programs. You can preset up to eight programs within a one month time frame. If VCR Plus+ is available in your area, see the section "Recording TV programs using VCR Plus+" on page **44** for easier timer recording.

Before you start...

- Check that the clock is set correctly.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and tune in to the VCR. When using a cable box, turn it on.

1 **Press MENU and select TIMER SET/ CHECK, then press EXECUTE.**

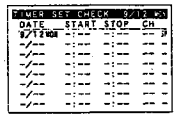
A short beep alerts you if the clock needs to be set.

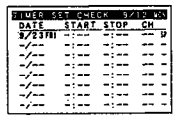


2 **Set the date to start recording:**

1 Press CURSOR ➡.
Make sure today's date is highlighted. If it isn't, reset the clock to the correct time.
2 Press CURSOR ⬆ to set the month and date.
The day of the week is set automatically.

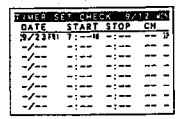
To record the same program every day or the same day once a week, see "Daily/ weekly recording" on page **43**.

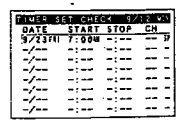




3 **Set the time to start recording:**

1 Press CURSOR ➡ to highlight the hour under "START," then press CURSOR ⬆/⬇ to set the hour.
2 Press CURSOR ➡ to highlight the minutes under "START," then press CURSOR ⬆/⬇ to set the minutes.





(continued)

Recording TV programs using the timer (continued)

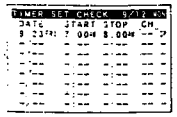
Tips

- To set the channel, you can also use the CH +/– or number buttons.
- To record video sources from LINE IN 1 or 2 jacks, press INPUT SELECT to display "LINE1" or "LINE2" in the "CH" position.
- When CABLE BOX CONTROL is set to ON, timer recording cannot be done through LINE IN.
- To set the recording tape speed, you can also use TAPE SPEED.
- To change or correct a setting before confirming it, press CURSOR ➡ to highlight the item you want to change and reset it.

Notes

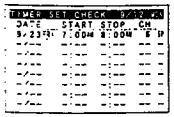
- If the I► tape indicator in the VCR's display window and the TIMER indicator on the VCR flash when the VCR turns off, check for one of the following causes:
  - no cassette has been inserted,
  - the tape is at its end, or
  - the safety tab on the cassette has been removed.

4 **Press CURSOR ➡, then set the time to stop recording in the same way.**



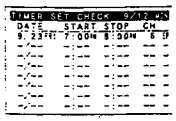
5 **Press CURSOR ➡, then press CURSOR ↑/↓ to select the channel you want to record.**

Only the channels preset in the VCR will appear. When using cable box control, the cable box channels appear.



6 **Press CURSOR ➡, then press CURSOR ↑/↓ to select the tape speed, SP (standard play) or EP (extended play).**

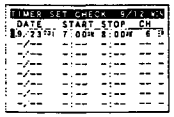
See "To select tape speeds" on page **38**.



7 **To confirm your program, press CURSOR ➡.**

All the settings stop being highlighted and the cursor (▮) appears in the leftmost column.

To preset another timer setting, move the cursor to the next line using CURSOR ↓ and repeat steps **2** to **7**.



8 **After making the desired timer settings, press EXECUTE.**

9 **Press POWER to turn off the VCR.**

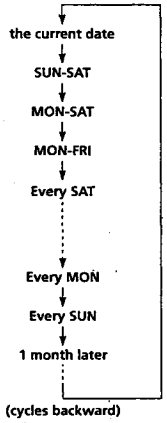
The TIMER indicator on the VCR lights up and stands by for recording. When using a cable box, leave it on.

The VCR automatically turns on and starts recording at the preset start time, and turns off at the preset stop time.

To stop recording

To stop while the VCR is recording a program, press ■ STOP to turn off the TIMER indicator on the VCR.

Daily/weekly recording



To use the VCR while recording

You can do the following tasks during timer recording.

To	Press
Reset the counter to "0H00M00S"	COUNTER RESET
Display tape information on the TV screen	DISPLAY
Check the timer settings	MENU and select TIMER SET/CHECK
Watch another TV program	TV/VTR (See "Watching a TV program while recording another" on page **39**.)

Using the VCR before timer recording begins

Press POWER to turn on the VCR. This turns off the TIMER indicator on the VCR. The VCR is ready for use.

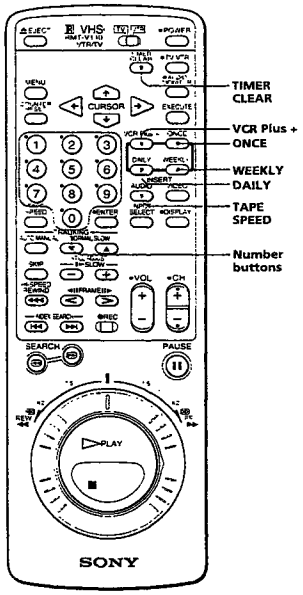
After using the VCR, turn it off. This turns on the TIMER indicator on the VCR. When using a cable box, leave it on. If you do not turn the VCR off before the time you've set it to start recording, the timer setting will be cancelled.

Daily/weekly recording

Daily recording records the same program every day of the week; weekly recording records the same program on the same day, every week.

When you set the date to start recording in step **2** of "Recording TV programs using the timer," press CURSOR ↓ until the desired day appears. Each time you press the button, the indication changes as shown on the left.

Recording TV programs using VCR Plus+



Tip

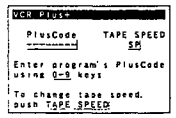
- If you've entered the wrong PlusCode, press TIMER CLEAR and start again from the beginning.

This section shows you another way of timer recording: recording using VCR Plus+. This allows you to record TV programs more easily. Just enter the program's "PlusCode," and the VCR will automatically record the program. You can preset up to eight programs within a one month time frame.

Before you start...

- Check that the clock is set correctly.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and tune in to the VCR. When using a cable box, turn it on.

1 **Press VCR Plus+.**
A short beep alerts you if the clock needs to be set.



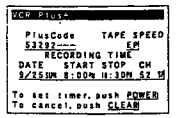
2 **Enter the desired program's PlusCode using the number buttons.**
If you make a mistake, press TIMER CLEAR and enter the PlusCode again.

3 **Select the tape speed, SP (standard play) or EP (extended play), by pressing TAPE SPEED.**

4 **Press ONCE, DAILY or WEEKLY according to the following:**

To record the program	Press
Only once	ONCE
Monday to Friday at the same scheduled time	DAILY
Every week at the same scheduled time	WEEKLY

The recording information appears on the TV screen: date, program start and stop times, channel number and tape speed. Check that the information is correct. If it is not, press TIMER CLEAR to cancel. To preset another timer setting, repeat steps **1** to **4**.



Notes

- If the ▮▶ tape indicator in the VCR's display window and the TIMER indicator on the VCR flash when the VCR turns off, check for one of the following causes:
  - no tape has been inserted,
  - the tape is at its end, or
  - the safety tab on the cassette has been removed.

Notes

- You cannot set VCR Plus+ in the following cases:
  - When the VCR is turned off.
  - While recording using the timer or quick timer.
- The timer will not accept settings in the following cases:
  - When you select DAILY for a Saturday and Sunday program.
  - When you select DAILY or WEEKLY for a program more than seven days ahead.
  - When you enter the PlusCode of a program that has already ended.

5 **Press POWER to turn the VCR off.**
The TIMER indicator on the VCR lights up and the VCR stands by for recording. When using a cable box, leave it on. The VCR automatically turns on, records the program and turns off.

To stop recording

To stop while the VCR is recording a program, press ■ STOP to turn off the TIMER indicator on the VCR.

To use the VCR while recording

You can do the following tasks while recording using VCR Plus+.

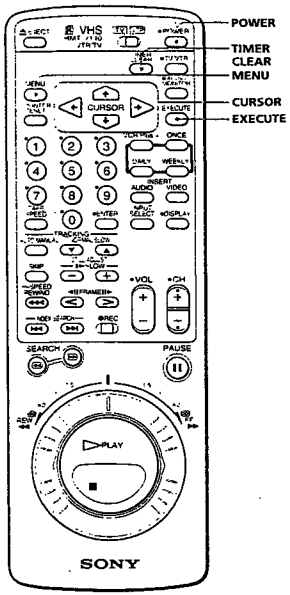
To	Press
Reset the counter to "0H00M00S"	COUNTER RESET
Display tape information on the TV screen	DISPLAY
Check the timer settings	MENU and select TIMER SET/CHECK
Watch another TV program	TV/VTR (See "Watching a TV program while recording another" on page 39.)

Using the VCR before recording begins

Press POWER to turn on the VCR. This turns off the TIMER indicator on the VCR. The VCR is ready for use.

After using the VCR, turn it off. This turns on the TIMER indicator on the VCR. When using a cable box, leave it on. If you do not turn the VCR off before the time you've set it to start recording, the timer setting will be cancelled.

Checking/changing/cancelling timer settings



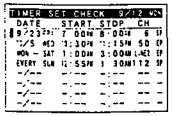
This section shows you how to check, change and cancel the timer settings after you've stored them in the VCR.

Before you start...

- Turn on your TV and tune in to the VCR.

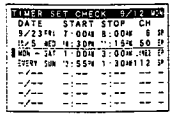
1 **Press POWER to turn on the VCR.**

2 **Press MENU and select TIMER SET/CHECK, then press EXECUTE.**



3 **Check the timer settings:**

- If you do not want to change or cancel the settings, press EXECUTE, then turn the VCR off to return to recording standby.
- If you want to change or cancel the settings, press CURSOR ↑/↓ to move the cursor (▮) to the setting you want to change or cancel.



4 **Change or cancel the timer setting:**

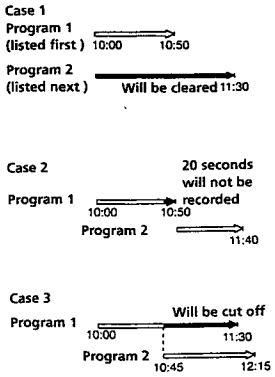
- To change the setting, press CURSOR ←/→ to highlight the item you want to change, and reset it using CURSOR ↑/↓ Then, press CURSOR → to move the cursor to the leftmost column.
- To cancel the setting, press TIMER CLEAR.

5 **Press EXECUTE.**

The VCR returns to the original screen. When there are any other timer settings left in the TIMER SET/CHECK menu, turn the VCR off to return to recording standby.

To check the timer settings during timer recording

Press MENU and select TIMER SET/CHECK. After checking, press EXECUTE to turn off the display.



When the timer settings overlap

The VCR will not record overlapping programs. If any of your timer settings overlap, change the settings.

Case 1: ***If you preset two programs to start recording at the same time...***

The program listed first in the TIMER SET/CHECK menu has priority over the other programs. The timer settings of lower priority programs will be erased from the TIMER SET/CHECK menu when the first program begins recording.

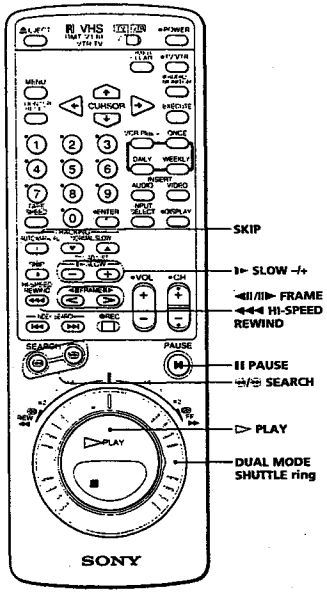
Case 2: ***If you preset program 2 to start recording at the same time you preset program 1 to finish recording...***

The last 20 seconds of program 1 will not be recorded because the VCR will enter recording pause for program 2 before program 1 is finished.

Case 3: ***If you preset program 2 to start recording before program 1 is finished recording...***

Program 2 will start recording before program 1 has finished.

Playing/searching at various speeds



Tip

- Adjust the picture using the ▼/▲ TRACKING NORMAL/SLOW STILL ADJUST buttons if:
  - Streaks appear while playing in slow motion.
  - Bands appear on the top or bottom while pausing.
  - The picture shakes while pausing.

Notes

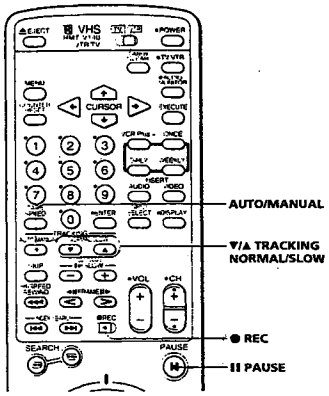
- Tapes recorded in LP mode can be played back on this VCR, while playback in modes other than normal forward speed is not guaranteed.
- When rewinding at high speed, you will not see the time counter.

You can play back a tape at various speeds: high-speed, slow motion, frame by frame and so on. These options are also useful for searching for a specific point during playback. The sound is muted during these operations.

Playback options	Operation	To resume normal playback
Playing at various speeds:	During playback, turn the DUAL MODE SHUTTLE ring right or left to:	Release the ring.
One-fifth the normal speed	1/5	
Twice the normal speed	X2	
High speed	⏩ or ⏪	
Fast-forwarding/Rewinding	During stop, turn the DUAL MODE SHUTTLE ring to ▶▶ FF or to ◀◀ REW and release.	Press ▷ PLAY.
Viewing the picture during fast-forward or rewind	During fast-forward, turn the DUAL MODE SHUTTLE ring to ▶▶ FF. During rewind, turn the ring to ◀◀ REW.	To return to the previous mode, release the ring.
Locking in a high-speed picture	During playback or pause, press ⏩ SEARCH or ⏪ SEARCH. To change direction, press ◀II FRAME (backward) or II▶ FRAME (forward).	Press ▷ PLAY.
Locking in a slow-motion picture	During playback or pause, press I▶ SLOW –/+. You can increase the playback speed with the + button and decrease the speed with the – button. To change direction, press ◀II FRAME (backward) or II▶ FRAME (forward).	Press ▷ PLAY.
Playing frame by frame	During pause, press II▶ FRAME to advance the picture one frame or ◀II FRAME to reverse the picture one frame.	Press ▷ PLAY.
Skipping a scene	During playback, press SKIP.	The VCR automatically resumes normal playback.
Rewinding at high speed	Press ◀◀◀ HI-SPEED REWIND.	Press ▷ PLAY.
Rewind and restart play	During stop, press ▷ PLAY on the VCR while holding the DUAL MODE SHUTTLE ring on the VCR at the ◀◀ REW position, or while pressing down ◀◀◀ HI-SPEED REWIND on the VCR.	——

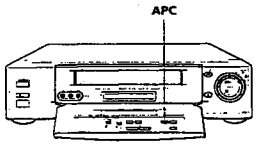
(continued)

Adjusting the picture



Note

- The tracking cannot be adjusted automatically for tapes recorded in LP mode.



Notes

- Tapes recorded using the APC function are played back normally on VCRs that do not have the APC function.
- Press II PAUSE to release recording after the APC indicator stops flashing. If you start recording before the APC indicator stops flashing, the APC function is cancelled.

The VCR automatically adjusts the picture for the best possible playback or recording. If, however, you find the automatic adjustment unsatisfactory, you can adjust the picture manually.

Adjusting the tracking

Though the VCR automatically adjusts the tracking when playing a tape (the AUTO TRACKING indicator flashes in the display window, then lights steadily), distortion may occur if the tape was recorded in poor condition. If so, manually adjust the tracking condition.

Press the ▼/▲ TRACKING NORMAL/SLOW buttons to display the tracking meter. The distortion should disappear as you press one of the two buttons. If you cannot get a clear picture with manual adjustment, press TRACKING AUTO/MANUAL to return to automatic adjustment.

Tracking meter

About Adaptive Picture Control (APC)

Adaptive Picture Control (APC) automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you leave APC on (with the APC indicator in the display window lit).

To use APC during playback

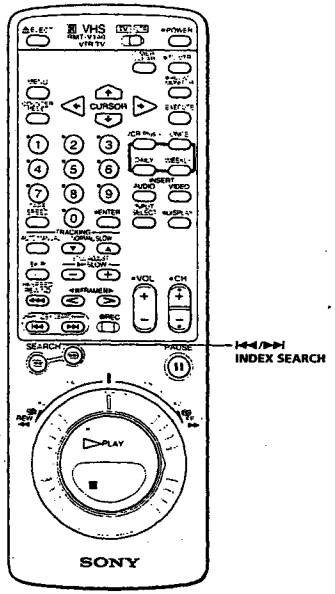
The APC function automatically works on all types of tapes, including rental tapes. You can play a tape using the APC function even if the tape was not recorded with it.

To use APC while recording

Whenever you insert a tape and first start recording, the VCR adjusts to the tape using the APC function (the APC indicator flashes rapidly). This adjustment is retained until the tape is ejected. There is a short delay before the VCR actually starts recording while the VCR analyzes the tape.

If you want to start recording precisely the first time you record, set the VCR to recording pause mode (the APC indicator flashes slowly) and press ● REC to let the VCR analyze the tape. When the APC indicator stops flashing, press II PAUSE to start recording. Recording begins immediately.

Searching using the index function



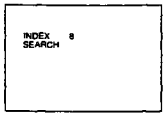
The VCR automatically marks an index signal at the point where recording starts (with the exception of when you start recording from recording pause). Use this as a reference to find the beginning of the recording. Since the index number indicates the relative position from the current position, specify how many index signals ahead or behind the specific index signal is from the current position. The VCR can search up to 99 index signals ahead or behind of the current position.

1 **Insert an indexed tape into the VCR.**

2 **Press the I◄◄/►►I INDEX SEARCH buttons repeatedly until the index number you want appears on the TV screen:**

- To locate succeeding programs, press ►►I INDEX SEARCH.
- To locate preceding programs, press I◄◄ INDEX SEARCH.

The VCR starts searching and the index number on the TV screen counts down to zero. Playback starts automatically from that point.

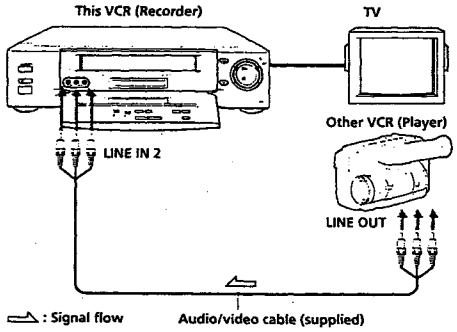


Editing

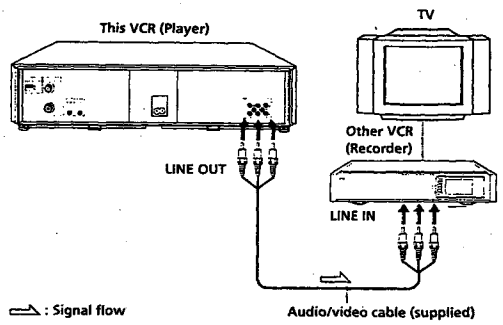
Editing with another VCR

This section shows you how to edit to or from another VCR or camcorder. You can make a copy of a tape using this VCR for recording or playback.

How to hook up to record on this VCR



How to hook up to record to another VCR



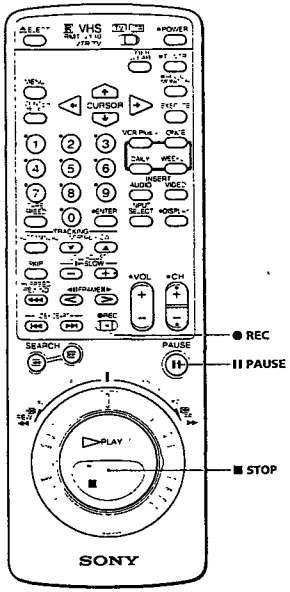
Tips

- Make sure you connect the plugs to jacks of the same color.
- To connect the other VCR, you can use the LINE IN 1 jacks as well. In this case, press INPUT SELECT to display L1 in the display window.
- If the other VCR is a monaural type, leave the red plugs unconnected.

Note

- When connecting the VCRs, do not simultaneously connect the LINE IN and LINE OUT jacks on your VCR. A humming noise may occur if you do this.

Editing with another VCR (continued)



Tips

- To make your editing more precise, use the pause buttons on the VCRs.
- To cut out unwanted scenes while editing, press II PAUSE on this VCR when an unwanted scene begins. When it ends, press II PAUSE again to resume recording (Assemble Editing).

Operation (when recording on this VCR)

Before you start editing

- Press INPUT SELECT to display "L2" in the display window.
- Press TAPE SPEED to select the recording tape speed (SP/EP).
- On this VCR, set the EDIT switch to ON. If the other VCR has a similar switch, set it to ON as well.

1 **Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.**

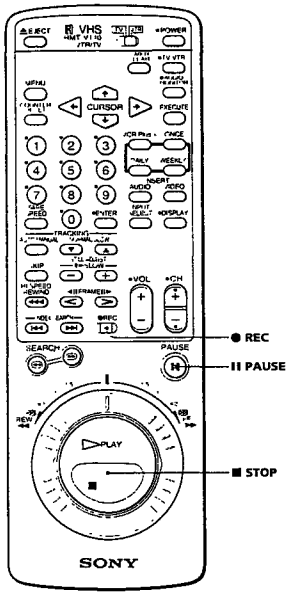
2 **Insert a tape into this (recording) VCR. Search for the point to start recording and press II PAUSE.**

3 **Press ● REC on this VCR and set it to recording pause.**

4 **To start editing, press the II PAUSE buttons on both VCRs to release the VCRs from pause.**
For best results, press the pause button on the other VCR just before pressing II PAUSE on this VCR.

To stop editing
Press the ■ STOP buttons on both VCRs.

Insert editing



Note

- You must be in playback pause mode before pressing an INSERT button. (If you are in recording pause mode, you cannot use the insert features.)

You can replace unwanted scenes with other scenes by recording pictures and/or sound over the prerecorded tape. With the video insert function, the original video and hi-fi sound are replaced while the original monaural sound is retained. With the audio insert function, the original monaural sound is replaced. The original video and hi-fi sound, however, are left intact.

Before you start editing

- Follow the instructions on page **51** to hook up your VCRs. To insert sound using a stereo system, see "To hook up with a stereo system" on the next page.
- Press INPUT SELECT to display "L2" in the display window.

1 **Insert a source tape into the playback VCR or into the stereo system. Search for the point to start playback and set it to playback pause.**

2 **Insert the prerecorded tape into this (recording) VCR. Search for the end of the unwanted scene and press II PAUSE.**

3 **Press COUNTER RESET on this VCR to reset the counter to "0H00M00S."**

4 **Rewind the tape to the beginning of the unwanted scene.**
This VCR pauses.

5 **Press the INSERT buttons according to the following:**

To insert	Press	So that
Both picture and sound	INSERT AUDIO, then INSERT VIDEO	"AV INS II" appears on the TV screen, and "A V INSERT" appears in the display window on the VCR.
Picture only	INSERT VIDEO	"V INS II" appears on the TV screen, and "V INSERT" appears in the display window on the VCR.
Sound only	INSERT AUDIO	"A INSERT" appears in the display window on the VCR.

(continued)

Insert editing (continued)

6 **To start editing, simultaneously press the II PAUSE buttons on this VCR and on the other VCR or stereo system.**
When the counter of this VCR reaches "0H00M00S," editing stops automatically.

To stop editing
Press the ■ STOP buttons on this VCR and on the other VCR or stereo system.

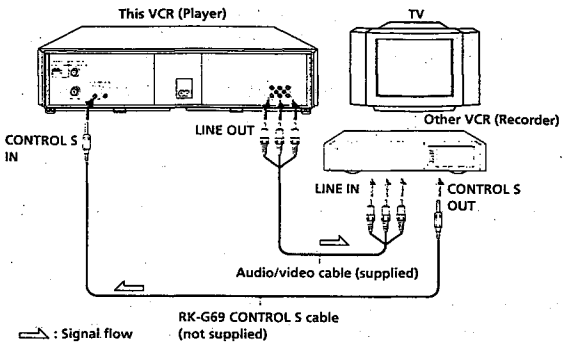
To hook up with a stereo system
Connect LINE-IN 2 AUDIO of this VCR and the audio out jacks of the stereo system, using the RK-C510KS audio cable (not supplied). Display "LINE 2" on the TV screen using INPUT SELECT.

Synchronized editing

If your other VCR has a CONTROL S OUT jack, connect the VCRs via the CONTROL S jacks. This additional connection lets you control both VCRs from one VCR for easier editing.

How to hook up via the CONTROL S jacks

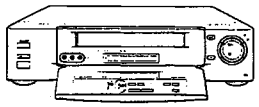
The CONTROL S connection only enables you to pause and release pause.

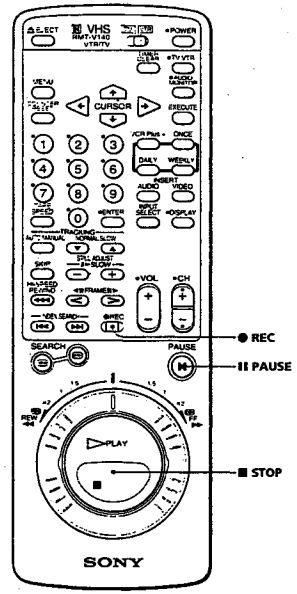


1-27

Synchronized editing (continued)

EDIT switch





Operation (when recording on the other VCR)

Before you start editing

- On this VCR, set the EDIT switch to ON. If the other VCR has a similar switch, set it to ON as well.

1 **Insert a source tape with its safety tab removed into this (playback) VCR. Search for the point to start playback and set it to playback pause.**

2 **Insert a tape into the other (recording) VCR. Search for the point to start recording and press II PAUSE.**

3 **Press ● REC on the other VCR to pause for recording.**

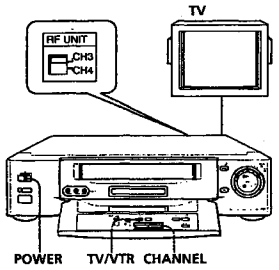
4 **To start editing, press SYNCHRO EDIT on the other VCR.**

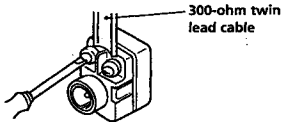
5 **At the point you want to stop recording, press SYNCHRO EDIT to stop editing.**
Both VCRs return to pause.

To stop editing
Press the ■ STOP buttons on both VCRs.

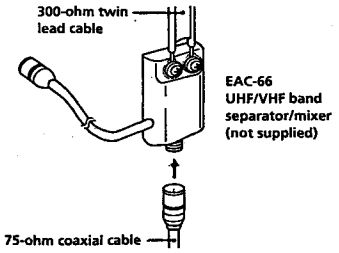
Additional Information

General setup information





EAC-32 antenna connector (not supplied)



Setting the RF unit

When connecting the VCR to the TV using only the antenna, you must set the RF UNIT switch on the rear of the VCR so that the TV can receive the correct signal from the VCR.
If you connect the VCR to the TV using the supplied audio/video cable, you can skip this step.

1 Set the RF UNIT switch on the rear of the VCR to CH3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel.

2 Press POWER to turn on the VCR.

3 Press TV/VTR to turn on the VTR indicator in the VCR's display window.

4 Press CHANNEL +/– to display a channel number in the display window. Select an active channel number in your area.

5 Turn on your TV and set it to the channel you selected in step **1** (channel 3 or 4).
The selected TV channel broadcast appears on the TV screen. If the channels change when you press CHANNEL +/–, you have made the correct setting.
Whenever you use the VCR, set the TV to the channel selected in step **1**.

Attaching the external antenna connector

When using a 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the VCR.

1 Loosen the screws on the antenna connector.

2 Wind the twin leads around the screws on the antenna connector.

3 Retighten the screws.

Attaching an UHF/VHF band mixer

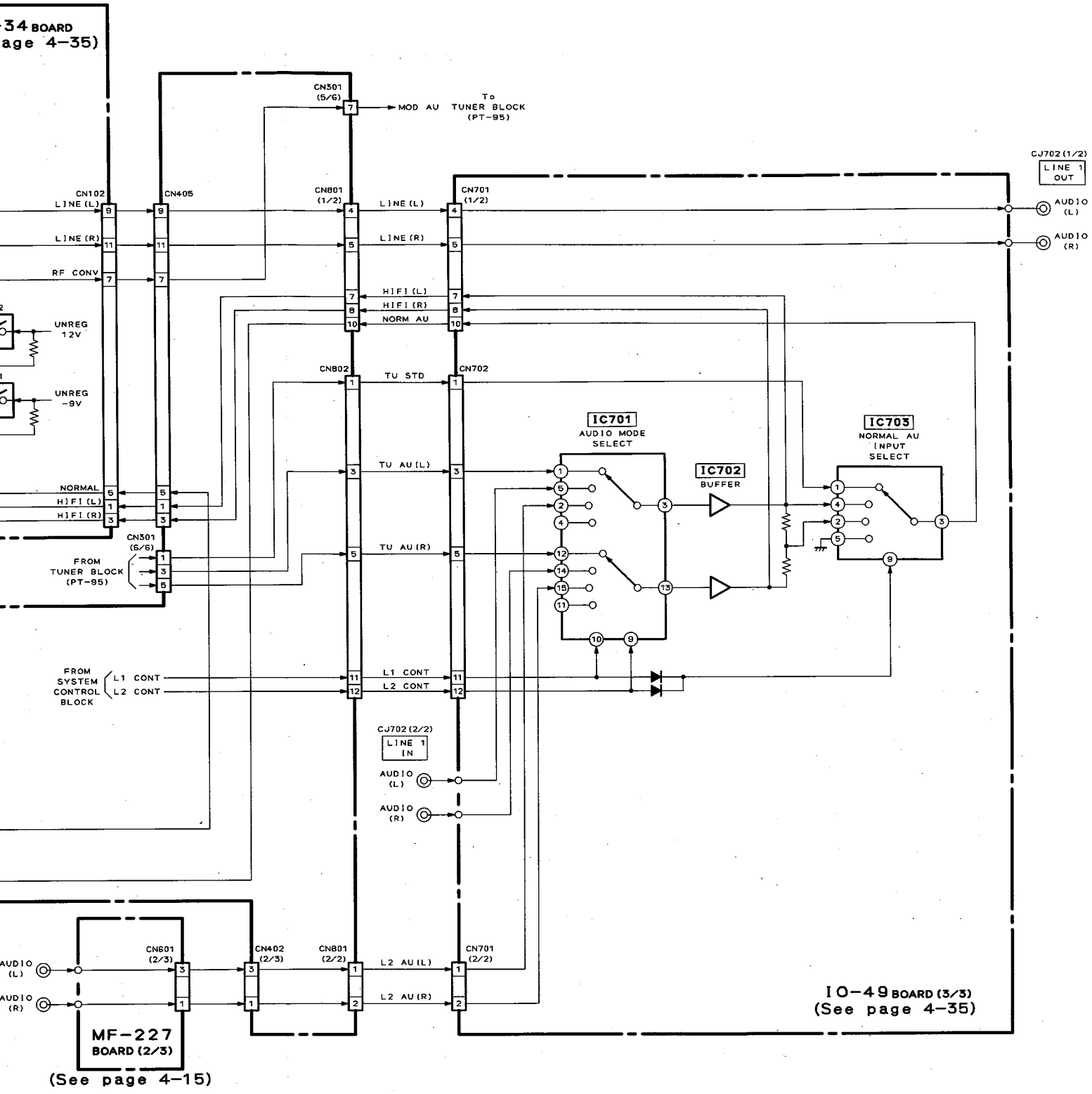
When using both 75-ohm coaxial cable and 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-66 UHF/VHF band separator/mixer (not supplied) to connect the antenna to the VCR.

1 Loosen the screws on the mixer.

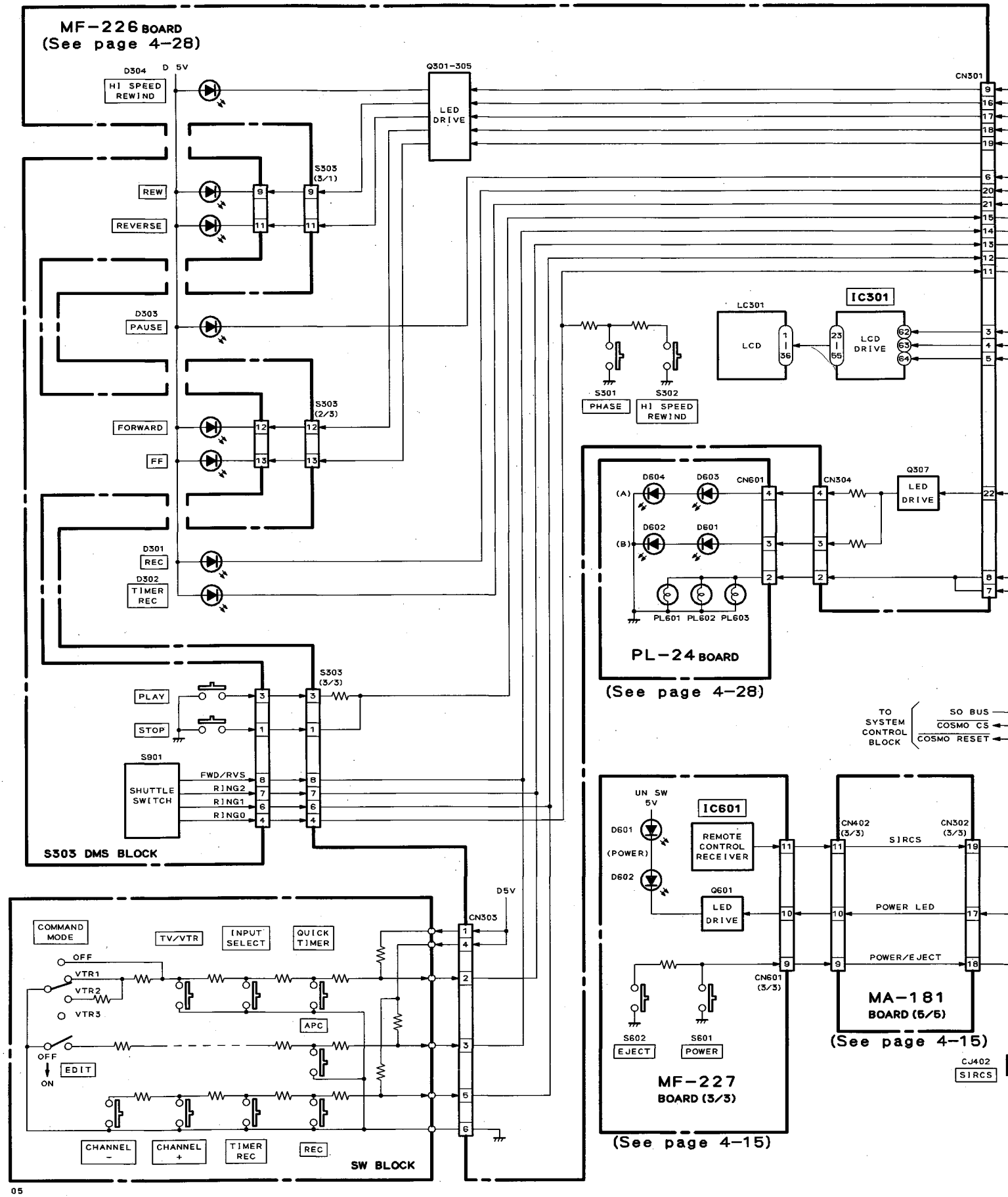
2 Wind the twin leads around the screws on the mixer.

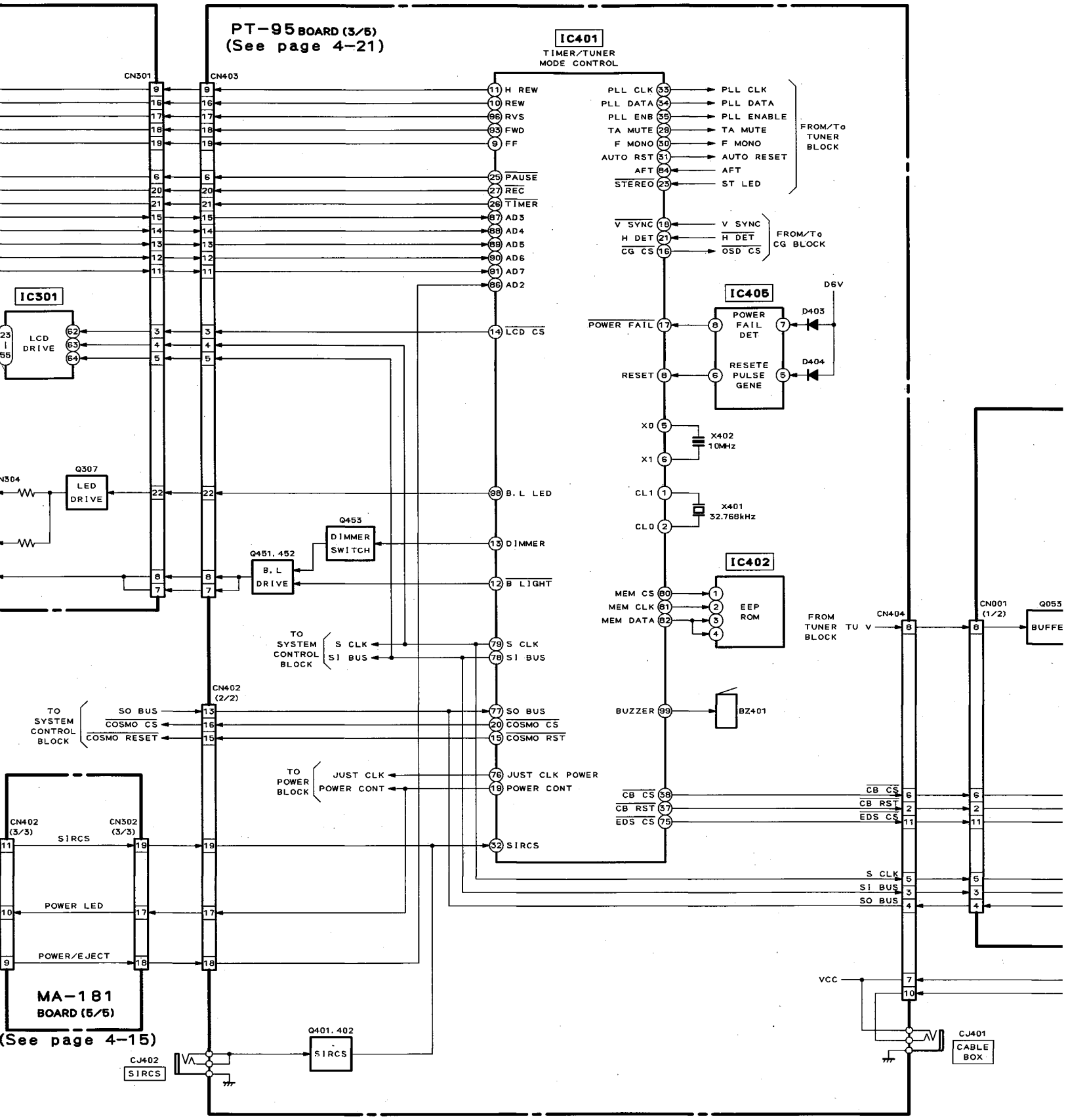
3 Retighten the screws.

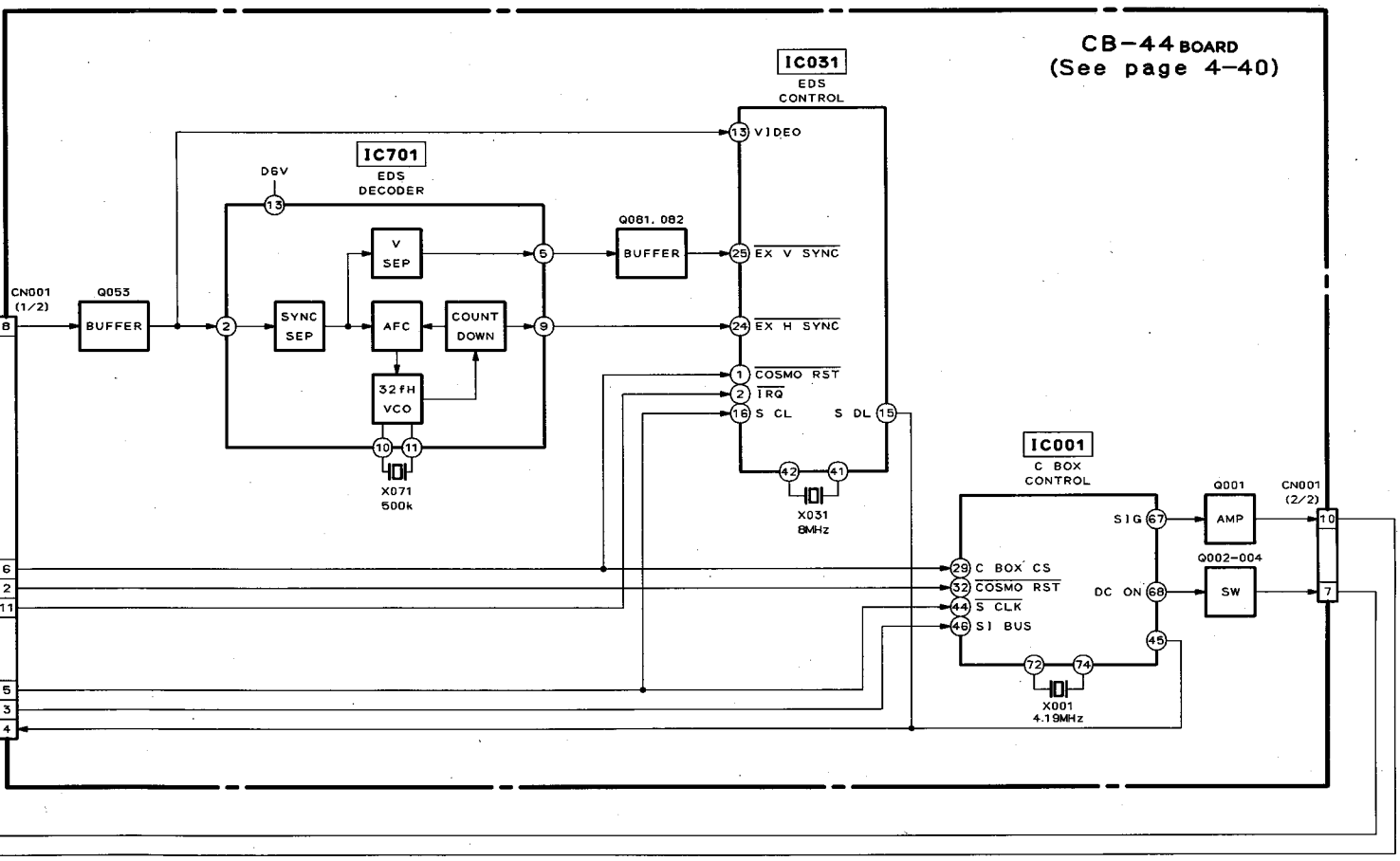
4 Connect the 75-ohm coaxial cable to the mixer.


-34 BOARD
age 4-35)
CN301
(5/6)
MOD AU
To
TUNER BLOCK
(PT-95)
CJ702 (1/2)
LINE 1
OUT
CN102
CN405
CN801
(1/2)
CN701
(1/2)
LINE (L)
LINE (R)
RF CONV
AUDIO
(L)
AUDIO
(R)
HIFI (L)
HIFI (R)
NORM AU
UNREG
12V
UNREG
-9V
CN802
TU STD
CN702
IC701
AUDIO MODE
SELECT
IC702
BUFFER
IC703
NORMAL AU
INPUT
SELECT
NORMAL
HIFI (L)
HIFI (R)
CN301
(5/6)
FROM
TUNER BLOCK
(PT-95)
TU AU (L)
TU AU (R)
FROM
SYSTEM
CONTROL
BLOCK
L1 CONT
L2 CONT
CJ702 (2/2)
LINE 1
IN
AUDIO
(L)
AUDIO
(R)
CN601
(2/3)
CN402
(2/3)
CN801
(2/2)
CN701
(2/2)
L2 AU (L)
L2 AU (R)
MF-227
BOARD (2/3)
(See page 4-15)
IO-49 BOARD (3/3)
(See page 4-35)

3-5. TIMER, MODE CONTROL BLOCK DIAGRAM

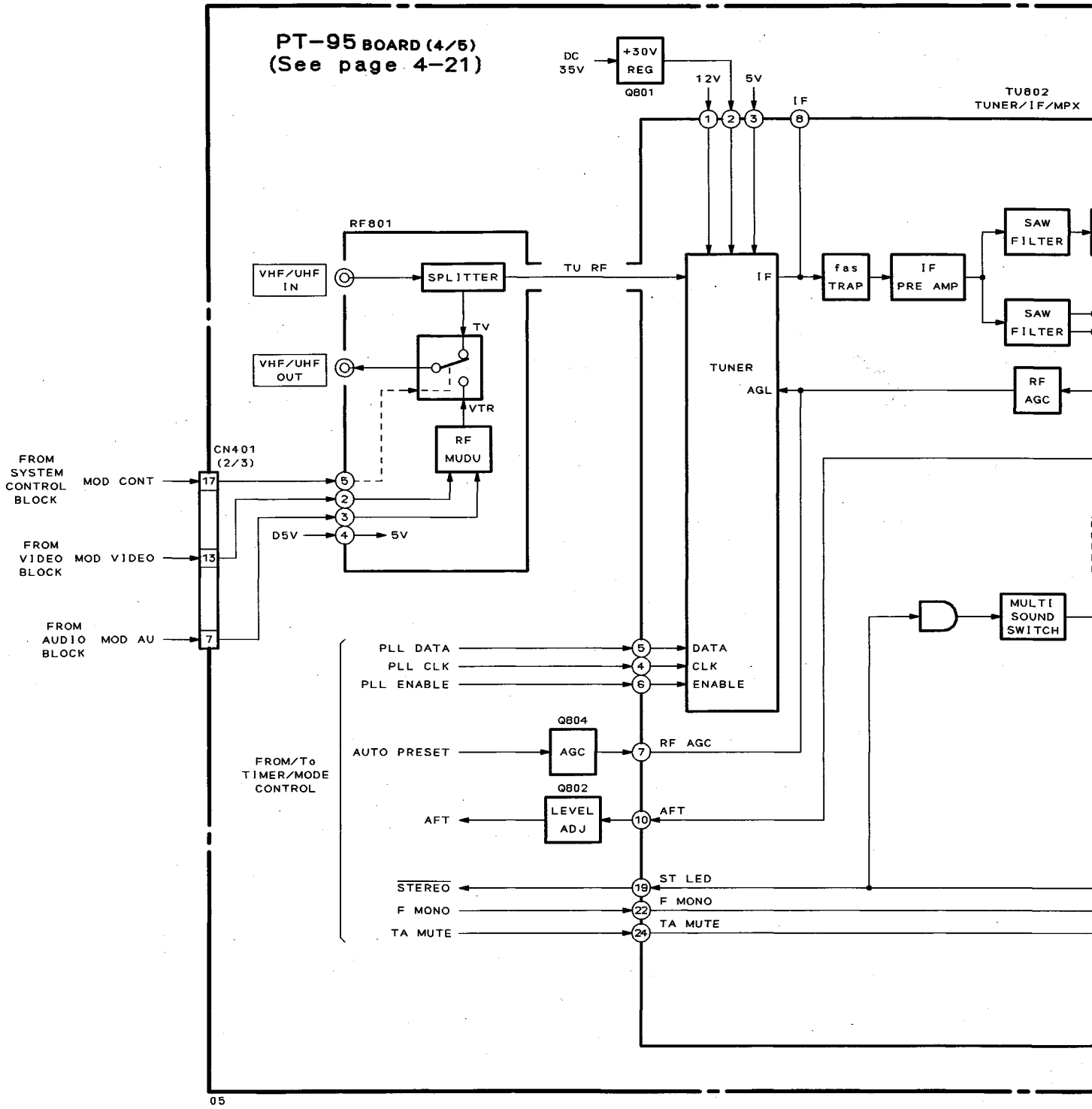


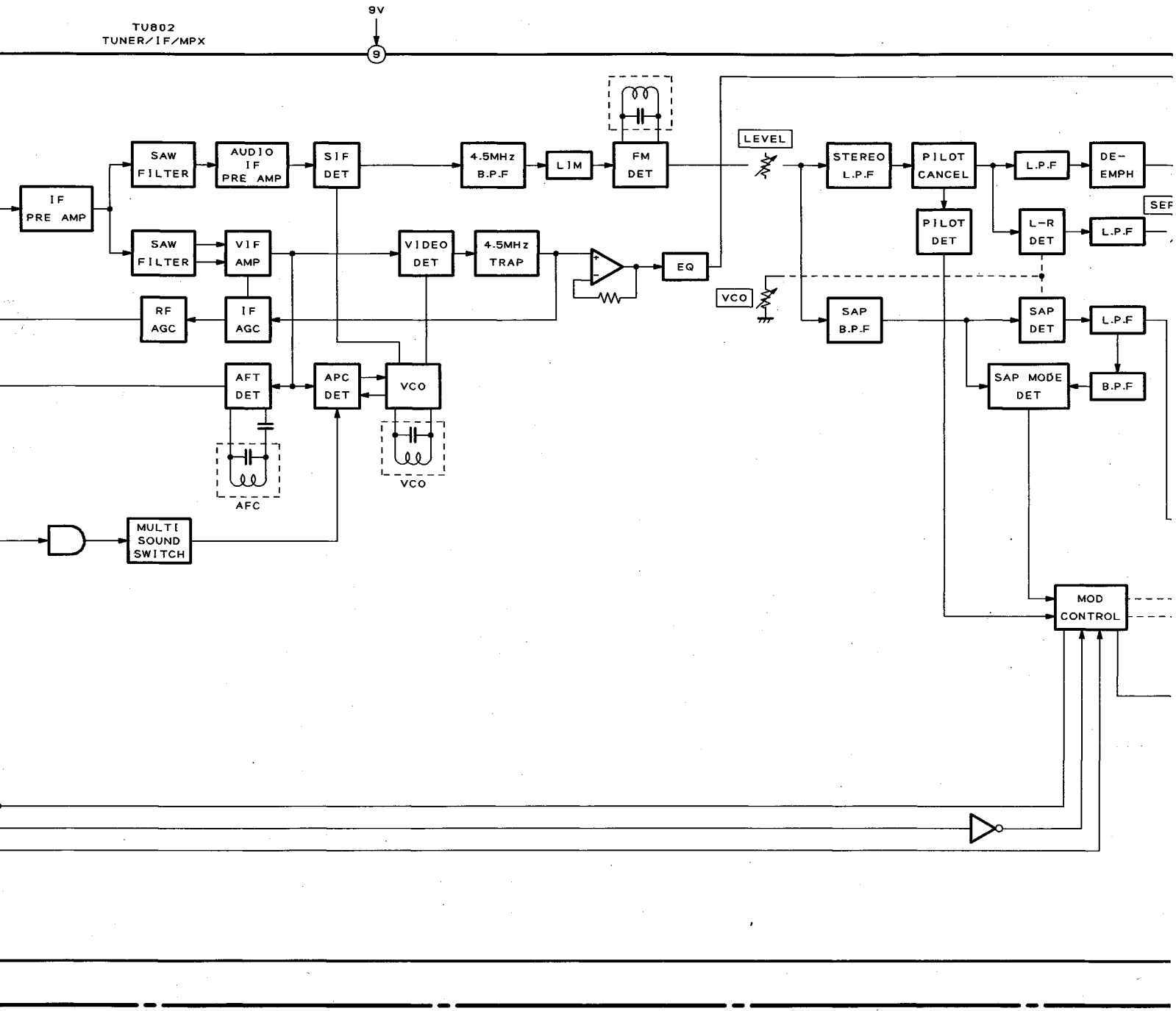

PT-95 BOARD (3/5)
(See page 4-21)
IC401
TIMER/TUNER
MODE CONTROL
CN301
CN403
H REW
REW
RVS
FWD
FF
PAUSE
REC
TIMER
AD3
AD4
AD5
AD6
AD7
AD2
PLL CLK
PLL DATA
PLL ENB
TA MUTE
F MONO
AUTO RST
AFT
STEREO
PLL CLK
PLL DATA
PLL ENABLE
TA MUTE
F MONO
AUTO RESET
AFT
ST LED
FROM/To TUNER BLOCK
V SYNC
H DET
CG CS
V SYNC
H DET
OSD CS
FROM/To CG BLOCK
IC301
LCD DRIVE
LCD CS
IC405
D6V
POWER FAIL
POWER FAIL DET
D403
RESETE PULSE GENE
D404
RESET
X0
X1
X402
10MHz
CL1
CL0
X401
32.768kHz
Q307
LED DRIVE
B. L LED
Q453
DIMMER SWITCH
DIMMER
Q451, 452
B. L DRIVE
B LIGHT
IC402
MEM CS
MEM CLK
MEM DATA
EEP ROM
TO SYSTEM CONTROL BLOCK
S CLK
SI BUS
S CLK
SI BUS
FROM TUNER BLOCK
TU V
CN404
CN001 (1/2)
Q053
BUFFE
CN402 (2/2)
TO SYSTEM CONTROL BLOCK
SO BUS
COSMO CS
COSMO RESET
SO BUS
COSMO CS
COSMO RST
BUZZER
BZ401
TO POWER BLOCK
JUST CLK
POWER CONT
JUST CLK POWER
POWER CONT
CB CS
CB RST
EDS CS
CB CS
CB RST
EDS CS
S CLK
SI BUS
SO BUS
CN402 (3/3)
CN302 (3/3)
SIRCS
SIRCS
POWER LED
POWER/EJECT
MA-181
BOARD (5/5)
(See page 4-15)
VCC
CJ401
CABLE BOX
CJ402
SIRCS
Q401, 402
SIRCS

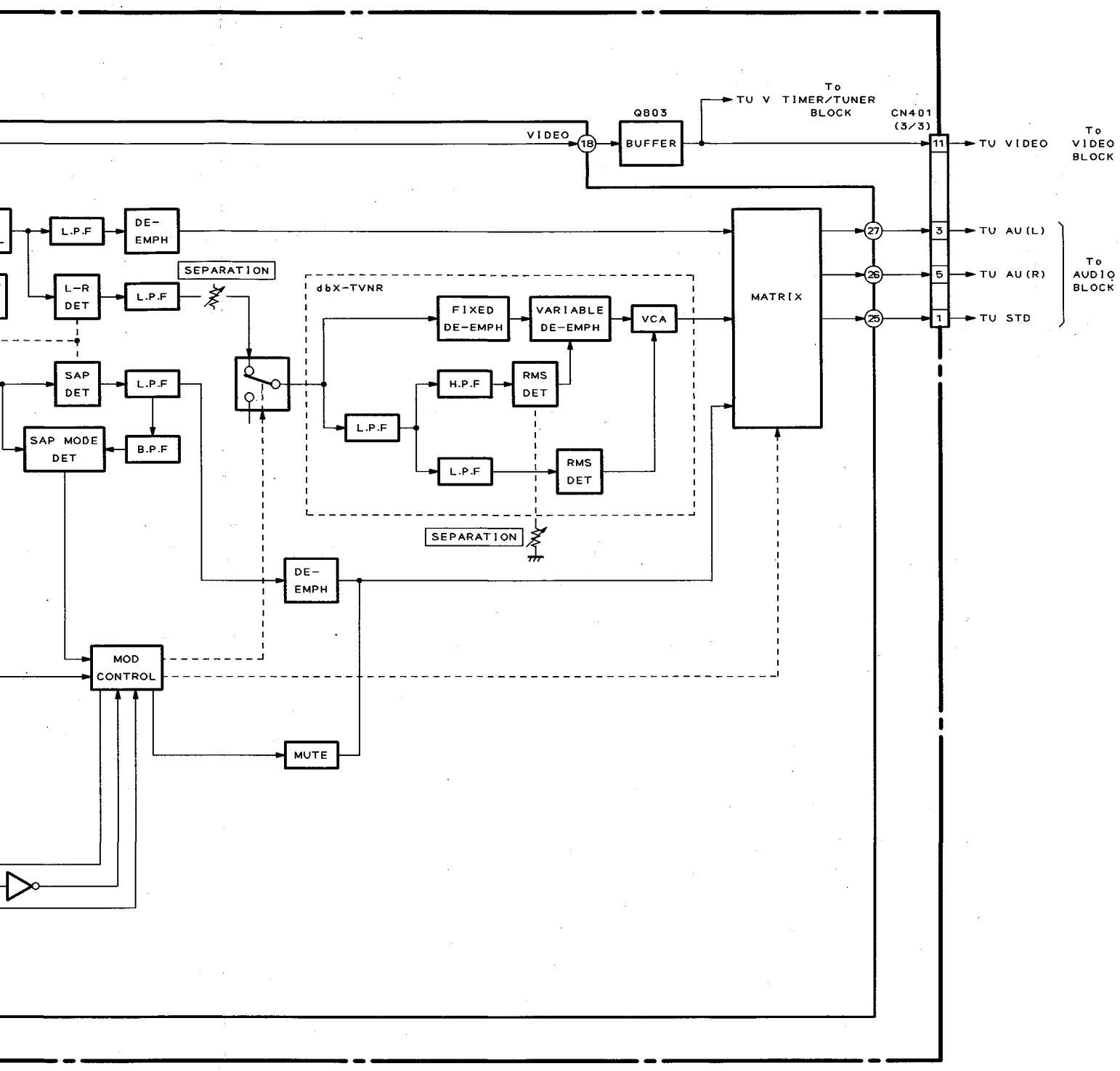

CB-44 BOARD
(See page 4-40)
IC031
EDS
CONTROL
13 VIDEO
IC701
EDS
DECODER
D6V
13
V
SEP
5
Q081, 082
BUFFER
25 EX V SYNC
CN001
(1/2)
Q053
BUFFER
2
SYNC
SEP
AFC
COUNT
DOWN
9
24 EX H SYNC
32fH
VCO
1 COSMO RST
2 IRQ
16 S CL
S DL 15
10
11
X071
500k
42
41
X031
8MHz
IC001
C BOX
CONTROL
SIG 67
Q001
AMP
CN001
(2/2)
10
Q002-004
SW
7
29 C BOX CS
32 COSMO RST
44 S CLK
46 SI BUS
DC ON 68
45
72
74
X001
4.19MHz
6
2
11
5
3
4

401
BLE
OX

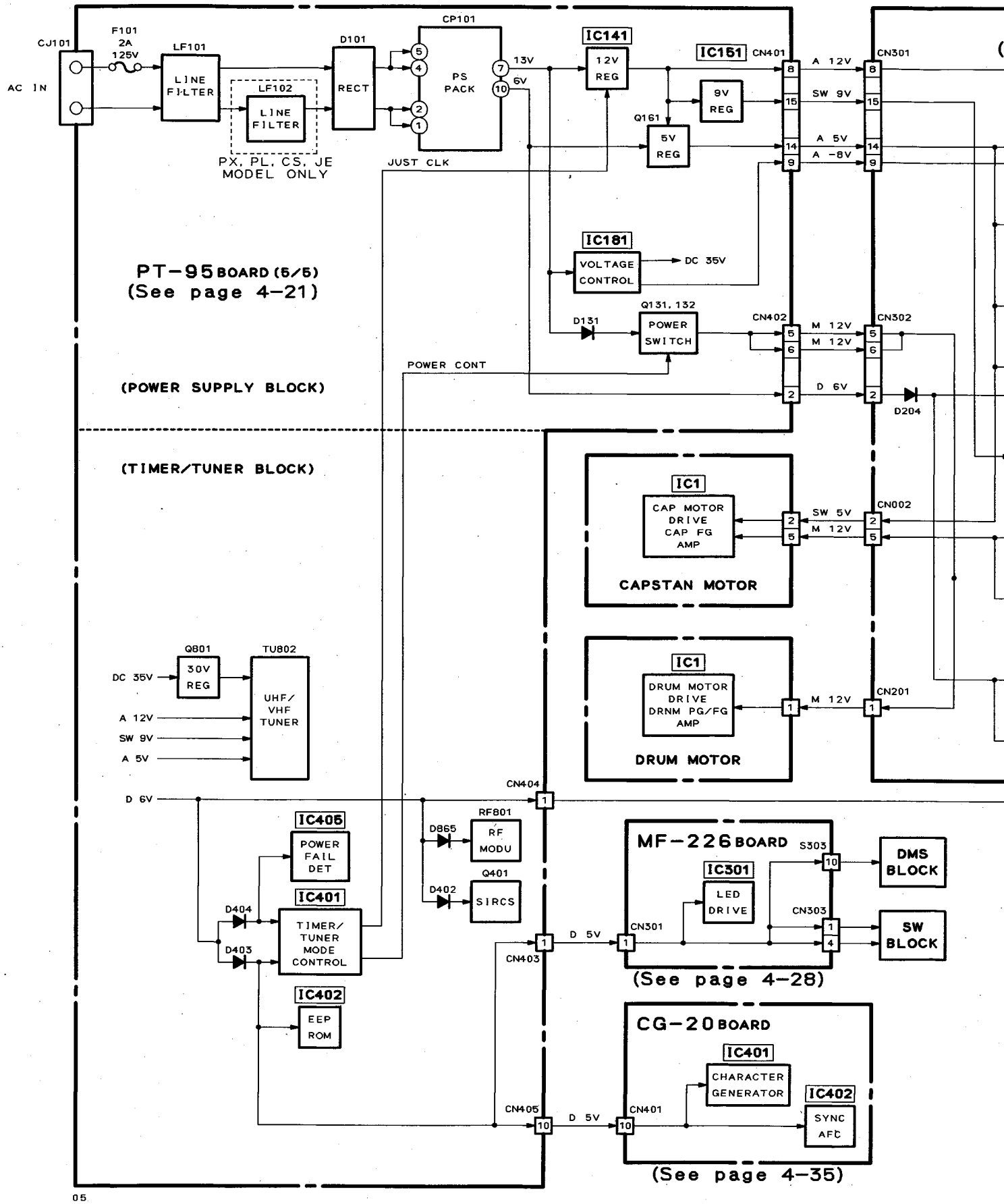
3-6. TUNER BLOCK DIAGRAM

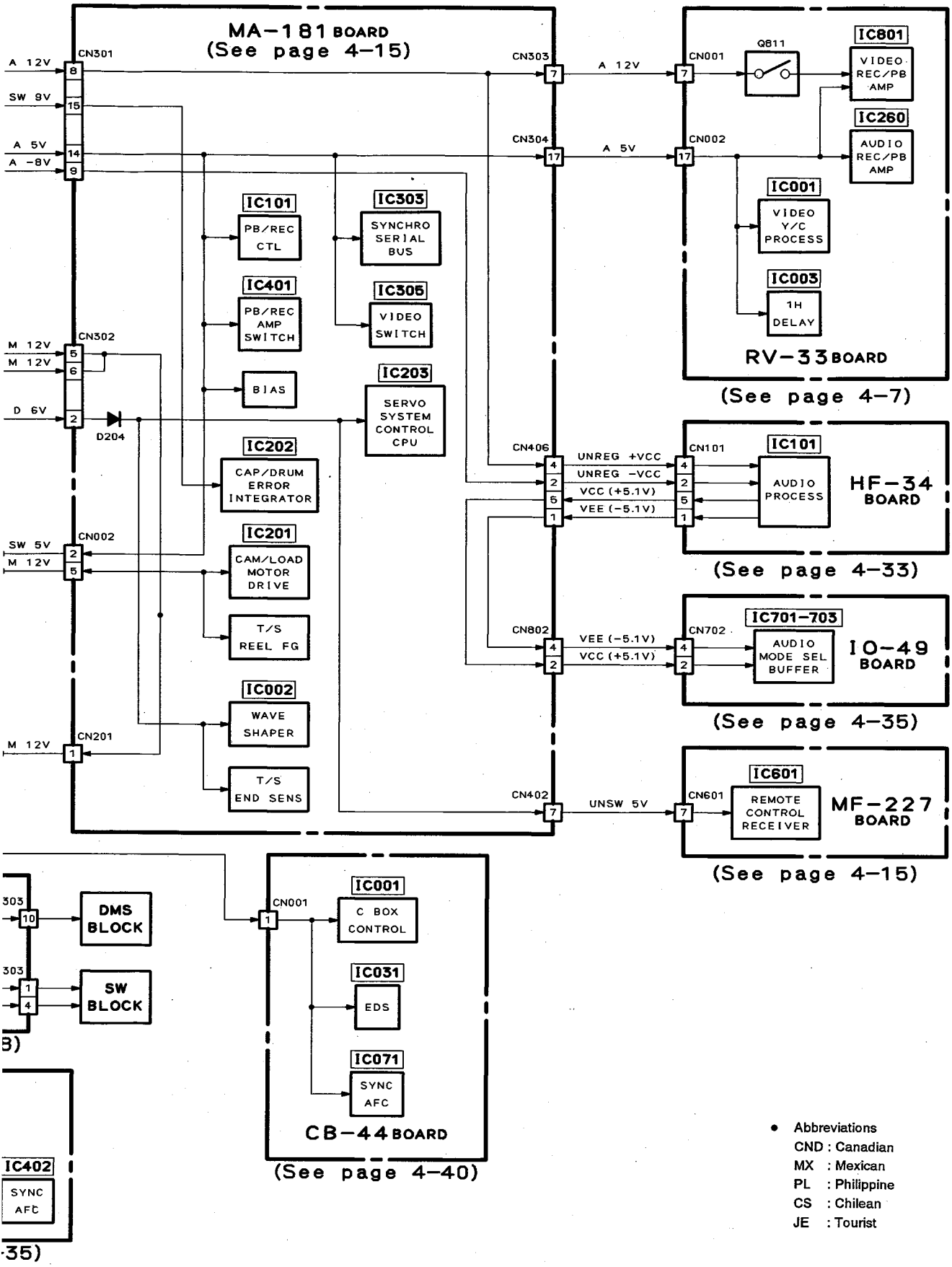



TU802
TUNER/IF/MPX
9V
9
IF PRE AMP
SAW FILTER
AUDIO IF PRE AMP
SIF DET
4.5MHz B.P.F
LIM
FM DET
LEVEL
STEREO L.P.F
PILOT CANCEL
L.P.F
DE-EMPH
SAW FILTER
VIF AMP
VIDEO DET
4.5MHz TRAP
EQ
PILOT DET
L-R DET
L.P.F
RF AGC
IF AGC
VCO
SAP B.P.F
SAP DET
L.P.F
AFT DET
APC DET
VCO
SAP MODE DET
B.P.F
AFC
VCO
MULTI SOUND SWITCH
MOD CONTROL


VIDEO
18
Q803
BUFFER
To
TU V TIMER/TUNER
BLOCK
CN401
(3/3)
11
TU VIDEO
To
VIDEO
BLOCK
L.P.F
DE-
EMPH
L-R
DET
L.P.F
SEPARATION
dbX-TVNR
FIXED
DE-EMPH
VARIABLE
DE-EMPH
VCA
MATRIX
27
26
25
3
5
1
TU AU(L)
TU AU(R)
TU STD
To
AUDIO
BLOCK
SAP
DET
L.P.F
H.P.F
RMS
DET
SAP MODE
DET
B.P.F
L.P.F
L.P.F
RMS
DET
SEPARATION
DE-
EMPH
MOD
CONTROL
MUTE

3-7. POWER SUPPLY BLOCK DIAGRAM





- Abbreviations
  CND : Canadian
  MX : Mexican
  PL : Philippine
  CS : Chilean
  JE : Tourist

Ref. No.	Part No.	Description			Remark
		< JACK >			
CJ702	1-565-320-71	JACK, PIN 6P (LINE IN 1/LINE OUT)			
		< CONNECTOR >			
* CN701	1-691-407-11	CONNECTOR, BOARD TO BOARD 10P			
CN702	1-568-672-11	CONNECTOR, BOARD TO BOARD 12P			
* CN703	1-764-212-11	CONNECTOR, BOARD TO BOARD 13P			
		< DIODE >			
D701	8-719-911-19	DIODE 1SS119			
D702	8-719-911-19	DIODE 1SS119			
D706	8-719-109-75	DIODE RD4.3ES-B2			
D707	8-719-109-75	DIODE RD4.3ES-B2			
		< IC >			
IC701	8-759-009-06	IC MC14052BF			
IC702	8-759-924-46	IC BA4560F			
IC703	8-759-009-06	IC MC14052BF			
		< JUMPER RESISTOR >			
JR702	1-216-295-00	METAL CHIP	0	5% 1/10W	
JR752	1-216-295-00	METAL CHIP	0	5% 1/10W	
		< COIL >			
L701	1-408-421-00	INDUCTOR 100uH			
L702	1-410-521-11	INDUCTOR 100uH			
L901	1-408-421-00	INDUCTOR 100uH			
L902	1-408-401-00	INDUCTOR 2.2uH			
		< TRANSISTOR >			
Q901	8-729-216-22	TRANSISTOR 2SA1162-G			
		< RESISTOR >			
R701	1-249-433-11	CARBON	22K	5% 1/4W	
R702	1-249-435-11	CARBON	33K	5% 1/4W	
R703	1-249-433-11	CARBON	22K	5% 1/4W	
R704	1-249-435-11	CARBON	33K	5% 1/4W	
R707	1-249-433-11	CARBON	22K	5% 1/4W	
R708	1-249-435-11	CARBON	33K	5% 1/4W	
R715	1-249-413-11	CARBON	470	5% 1/4W	F
R720	1-249-414-11	CARBON	560	5% 1/4W	F
R723	1-216-089-91	METAL GLAZE	47K	5% 1/10W	
R728	1-249-435-11	CARBON	33K	5% 1/4W	
R751	1-249-433-11	CARBON	22K	5% 1/4W	
R752	1-249-435-11	CARBON	33K	5% 1/4W	
R753	1-249-433-11	CARBON	22K	5% 1/4W	
R754	1-249-435-11	CARBON	33K	5% 1/4W	
R757	1-249-433-11	CARBON	22K	5% 1/4W	
R758	1-249-435-11	CARBON	33K	5% 1/4W	
R765	1-249-413-11	CARBON	470	5% 1/4W	F
R770	1-249-414-11	CARBON	560	5% 1/4W	F
R778	1-249-435-11	CARBON	33K	5% 1/4W	
R901	1-249-411-11	CARBON	330	5% 1/4W	
R903	1-249-408-11	CARBON	180	5% 1/4W	F
R904	1-247-811-31	CARBON	150	5% 1/4W	
R905	1-249-403-11	CARBON	68	5% 1/4W	F
R916	1-247-804-11	CARBON	75	5% 1/4W	
**********					
*	A-6782-257-A	MA-181 BOARD, COMPLETE (920HF)			
		**********			
*	A-6782-258-A	MA-181 BOARD, COMPLETE (770HF/771HF)			
		**********			
		(Ref.NO. 2,000 Series)			
		< CAPACITOR >			
C001	1-161-494-00	CERAMIC	0.022uF		25V
C002	1-161-494-00	CERAMIC	0.022uF		25V
C003	1-124-261-00	ELECT	10uF	20%	50V
C004	1-162-306-11	CERAMIC	0.01uF	20%	16V
C006	1-124-589-11	ELECT	47uF	20%	16V
C008	1-164-159-11	CERAMIC	0.1uF		50V
C009	1-164-159-11	CERAMIC	0.1uF		50V
C022	1-162-306-11	CERAMIC	0.01uF	20%	16V
C025	1-162-294-31	CERAMIC	0.001uF	10%	50V
C026	1-162-294-31	CERAMIC	0.001uF	10%	50V
C101	1-162-306-11	CERAMIC	0.01uF	20%	16V
C102	1-124-126-00	ELECT	47uF	20%	10V
C103	1-162-849-11	CERAMIC	0.068uF	10%	16V
C104	1-126-233-11	ELECT	22uF	20%	50V
C105	1-124-443-00	ELECT	100uF	20%	10V
C106	1-162-294-31	CERAMIC	0.001uF	10%	50V
C107	1-162-835-11	CERAMIC	0.0047uF	10%	16V
C108	1-164-159-11	CERAMIC	0.1uF		50V
C109	1-124-925-11	ELECT	2.2uF	20%	100V
C110	1-124-477-11	ELECT	47uF	20%	25V
C201	1-162-306-11	CERAMIC	0.01uF	20%	16V
C202	1-124-589-11	ELECT	47uF	20%	16V
C203	1-126-101-11	ELECT	100uF	20%	16V
C204	1-130-489-00	MYLAR	0.033uF	5%	50V
C205	1-162-306-11	CERAMIC	0.01uF	20%	16V
C206	1-126-233-11	ELECT	22uF	20%	50V
C207	1-137-372-11	FILM	0.022uF	5%	50V
C208	1-124-257-00	ELECT	2.2uF	20%	50V
C210	1-126-176-11	ELECT	220uF	20%	10V
C211	1-162-205-31	CERAMIC	18PF	5%	50V
C212	1-162-205-31	CERAMIC	18PF	5%	50V

Ref. No.	Part No.	Description		Remark
C213	1-164-159-11	CERAMIC	0.1uF	50V
C214	1-162-294-31	CERAMIC	0.001uF 10%	50V
C215	1-161-057-00	CERAMIC	0.033uF 10%	50V
C216	1-164-159-11	CERAMIC	0.1uF	50V
C299	1-162-282-31	CERAMIC	100PF 10%	50V
C351	1-124-907-11	ELECT	10uF 20%	50V
C352	1-124-907-11	ELECT	10uF 20%	50V
C356	1-124-261-00	ELECT	10uF 20%	50V
C361	1-162-282-31	CERAMIC	100PF 10%	50V
C362	1-162-282-31	CERAMIC	100PF 10%	50V
C366	1-162-282-31	CERAMIC	100PF 10%	50V
C401	1-164-084-11	CERAMIC	820PF 10%	50V
C402	1-164-091-11	CERAMIC	0.0022uF 10% 50V	(920HF)
C402	1-162-832-11	CERAMIC	0.0027uF 10%	16V (770HF/HF771)
C403	1-124-902-00	ELECT	0.47uF 20%	50V
C404	1-124-907-11	ELECT	10uF 20%	50V
C405	1-137-370-11	FILM	0.01uF 5%	50V
C406	1-164-159-11	CERAMIC	0.1uF	50V
C407	1-124-903-11	ELECT	1uF 20%	50V
C409	1-164-159-11	CERAMIC	0.1uF	50V
C410	1-124-907-11	ELECT	10uF 20%	50V
C411	1-124-252-00	ELECT	0.33uF 20%	50V
C414	1-130-494-11	MYLAR	0.082uF 5%	50V
C415	1-124-903-11	ELECT	1uF 20%	50V
C416	1-137-371-11	FILM	0.015uF 5%	50V
C417	1-124-034-51	ELECT	33uF 20%	16V
C418	1-124-034-51	ELECT	33uF 20%	16V
C421	1-162-290-31	CERAMIC	470PF 10%	50V
C852	1-162-306-11	CERAMIC	0.01uF 20%	16V
C853	1-162-306-11	CERAMIC	0.01uF 20% 16V	(920HF)
C854	1-164-087-11	CERAMIC	0.0015uF 10%	50V
C855	1-164-087-11	CERAMIC	0.0015uF 10% 50V	(920HF)
C856	1-104-696-11	FILM	0.015uF 5%	100V (770HF/771HF)
C856	1-137-612-11	FILM	0.0068uF 5% 100V	(920HF)
C857	1-104-697-11	FILM	0.047uF 5% 100V	(920HF)
C858	1-104-695-11	FILM	330PF 5%	100V
C859	1-124-120-11	ELECT	220uF 20%	25V (770HF/771HF)
C859	1-126-101-11	ELECT	100uF 20% 16V	(920HF)
C860	1-126-101-11	ELECT	100uF 20% 16V	(920HF)

< CONNECTOR >

CN002	1-569-335-11	CONNECTOR, BOARD TO BOARD 9P	
CN003	1-691-643-11	CONNECTOR, BOARD TO BOARD	
CN005	1-506-468-11	PIN, CONNECTOR 3P	
CN006	1-569-333-11	CONNECTOR, BOARD TO BOARD 3P	
CN101	1-506-468-11	PIN, CONNECTOR 3P	
* CN201	1-573-128-11	PIN, CONNECTOR 5P	
CN301	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
CN302	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
CN303	1-573-846-11	CONNECTOR, BOARD TO BOARD 14P	
CN304	1-573-852-11	CONNECTOR, BOARD TO BOARD 20P	
CN402	1-695-821-11	CONNECTOR, BOARD TO BOARD 12P	
* CN405	1-573-843-11	CONNECTOR, BOARD TO BOARD 11P	
* CN406	1-573-843-11	CONNECTOR, BOARD TO BOARD 11P	
* CN801	1-691-409-11	CONNECTOR, BOARD TO BOARD 10P	
* CN802	1-764-210-11	CONNECTOR, BOARD TO BOARD 12P	
* CN803	1-764-211-11	CONNECTOR, BOARD TO BOARD 13P	
CN854	1-506-469-11	PIN, CONNECTOR 4P	
CN855	1-506-468-11	PIN, CONNECTOR 3P	
* CN857	1-560-891-00	PIN, CONNECTOR 3P	

< DIODE >

D001	8-719-985-00	DIODE	GL451VS1
D004	8-719-109-93	DIODE	RD6.2ES-B2
D005	8-719-109-93	DIODE	RD6.2ES-B2
D006	8-719-109-93	DIODE	RD6.2ES-B2
D007	8-719-109-93	DIODE	RD6.2ES-B2
D201	8-719-911-19	DIODE	1SS119
D202	8-719-109-74	DIODE	RD4.3ES-B1
D203	8-719-109-81	DIODE	RD4.7ES-B2
D204	8-719-200-82	DIODE	11ES2
D206	8-719-911-19	DIODE	1SS119
D353	8-719-911-19	DIODE	1SS119
D401	8-719-911-19	DIODE	1SS119
D403	8-719-911-19	DIODE	1SS119

< IC >

IC002	8-759-912-77	IC	LMC324N
IC101	8-759-246-14	IC	TA8823N
⚠IC201	8-759-983-45	IC	BA6238A
IC202	8-759-503-91	IC	TL082ACP
IC203	8-752-848-82	IC	CXP80724-083Q
IC303	8-759-198-39	IC	HD49783
IC305	8-759-927-56	IC	BA7021
IC401	8-759-089-82	IC	BA7790LS

< COIL >

L101	1-414-189-31	INDUCTOR	100uH
L201	1-414-185-41	INDUCTOR	22uH
L202	1-414-183-41	INDUCTOR	10uH
L352	1-410-509-11	INDUCTOR	10uH
L401	1-410-071-11	INDUCTOR	10mH
L402	1-414-183-41	INDUCTOR	10uH
L852	1-410-687-11	INDUCTOR	1.2mH
L853	1-410-687-11	INDUCTOR	1.2mH (920HF)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MA-181

Ref. No.	Part No.	Description	Remark
		< PHOTO INTERRUPTER >	
PH001	8-759-144-33	IC PS6002	
PH002	8-759-144-33	IC PS6002	
		< IC LINK >	
⚠PS201	1-532-685-00	LINK, IC 0.8A	
⚠PS851	1-532-679-00	LINK, IC 0.6A	
		< TRANSISTOR >	
Q001	8-729-926-31	TRANSISTOR PT483F1S	
Q002	8-729-926-31	TRANSISTOR PT483F1S	
Q201	8-729-422-71	TRANSISTOR UN411L	
Q302	8-729-900-65	TRANSISTOR DTA144ES	
Q303	8-729-900-65	TRANSISTOR DTA144ES	
Q306	8-729-900-65	TRANSISTOR DTA144ES	
Q851	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	
Q852	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q (920HF)	
Q853	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q854	8-729-422-57	TRANSISTOR UN4111	
Q855	8-729-900-65	TRANSISTOR DTA144ES (920HF)	
		< RESISTOR >	
R001	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R002	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R003	1-249-426-11	CARBON 5.6K 5% 1/4W	
R004	1-249-426-11	CARBON 5.6K 5% 1/4W	
R005	1-249-415-11	CARBON 680 5% 1/4W	F
R006	1-249-441-11	CARBON 100K 5% 1/4W	
R007	1-249-441-11	CARBON 100K 5% 1/4W	
R008	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R009	1-249-408-11	CARBON 180 5% 1/4W	F
R010	1-249-422-11	CARBON 2.7K 5% 1/4W	F
R011	1-249-437-11	CARBON 47K 5% 1/4W	
R012	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R015	1-249-437-11	CARBON 47K 5% 1/4W	
R016	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R017	1-249-429-11	CARBON 10K 5% 1/4W	
R018	1-249-429-11	CARBON 10K 5% 1/4W	
R019	1-249-429-11	CARBON 10K 5% 1/4W	
R020	1-249-429-11	CARBON 10K 5% 1/4W	
R023	1-249-414-11	CARBON 560 5% 1/4W	F
R024	1-249-437-11	CARBON 47K 5% 1/4W	
R025	1-249-437-11	CARBON 47K 5% 1/4W	
R101	1-247-901-11	CARBON 820K 5% 1/4W	
R102	1-249-439-11	CARBON 68K 5% 1/4W	
R103	1-249-441-11	CARBON 100K 5% 1/4W	
R104	1-249-441-11	CARBON 100K 5% 1/4W	
R105	1-Z49-435-11	CARBON 33K 5% 1/4W	
R106	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R107	1-249-411-11	CARBON 330 5% 1/4W	
R108	1-247-807-31	CARBON 100 5% 1/4W	
R109	1-215-429-00	METAL 2.2K 1% 1/6W	
R110	1-249-417-11	CARBON 1K 5% 1/4W	F
R126	1-215-429-00	METAL 2.2K 1% 1/6W	
R203	1-249-429-11	CARBON 10K 5% 1/4W	
R204	1-249-429-11	CARBON 10K 5% 1/4W	
R205	1-249-429-11	CARBON 10K 5% 1/4W	
R206	1-249-436-11	CARBON 39K 5% 1/4W	
R207	1-249-437-11	CARBON 47K 5% 1/4W	
R208	1-249-417-11	CARBON 1K 5% 1/4W	F
R209	1-249-438-11	CARBON 56K 5% 1/4W	
R210	1-249-429-11	CARBON 10K 5% 1/4W	
R211	1-247-840-00	CARBON 2.4K 5% 1/4W	
R212	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R213	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R214	1-247-885-00	CARBON 180K 5% 1/4W	
R215	1-249-432-11	CARBON 18K 5% 1/4W	
R216	1-249-417-11	CARBON 1K 5% 1/4W	F
R217	1-249-433-11	CARBON 22K 5% 1/4W	
R218	1-249-436-11	CARBON 39K 5% 1/4W	
R219	1-249-433-11	CARBON 22K 5% 1/4W	
R220	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R222	1-249-422-11	CARBON 2.7K 5% 1/4W	F
R224	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R225	1-249-437-11	CARBON 47K 5% 1/4W	
R226	1-249-437-11	CARBON 47K 5% 1/4W	
R311	1-249-429-11	CARBON 10K 5% 1/4W	
R355	1-249-429-11	CARBON 10K 5% 1/4W	
R356	1-249-429-11	CARBON 10K 5% 1/4W	
R359	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R362	1-249-417-11	CARBON 1K 5% 1/4W	F
R363	1-249-417-11	CARBON 1K 5% 1/4W	F
R364	1-249-434-11	CARBON 27K 5% 1/4W	
R365	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R366	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R367	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R368	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R369	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R370	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R371	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R372	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R373	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R374	1-249-424-11	CARBON 3.9K 5% 1/4W	F
R375	1-249-401-11	CARBON 47 5% 1/4W	F
R376	1-249-401-11	CARBON 47 5% 1/4W	F
R379	1-249-429-11	CARBON 10K 5% 1/4W	

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Ref. No.	Part No.	Description			Remark
R401	1-249-437-11	CARBON	47K	5%	1/4W
R402	1-247-891-00	CARBON	330K	5%	1/4W (920HF)
R402	1-249-437-11	CARBON	47K	5%	1/4W (770HF/771HF)
R403	1-249-409-11	CARBON	220	5%	1/4W F
R404	1-247-891-00	CARBON	330K	5%	1/4W
R405	1-215-443-00	METAL	8.2K	1%	1/6W (770HF/771HF)
R405	1-249-428-11	CARBON	8.2K	5%	1/4W F (920HF)
R406	1-215-443-00	METAL	8.2K	1%	1/6W (770HF/771HF)
R406	1-249-428-11	CARBON	8.2K	5%	1/4W F (920HF)
R407	1-249-435-11	CARBON	33K	5%	1/4W
R408	1-249-432-11	CARBON	18K	5%	1/4W
R409	1-259-880-11	CARBON	2.2M	5%	1/4W
R410	1-249-429-11	CARBON	10K	5%	1/4W
R411	1-249-435-11	CARBON	33K	5%	1/4W
R418	1-249-409-11	CARBON	220	5%	1/4W F
R419	1-249-431-11	CARBON	15K	5%	1/4W
R420	1-249-411-11	CARBON	330	5%	1/4W
R421	1-249-414-11	CARBON	560	5%	1/4W F
R422	1-249-426-11	CARBON	5.6K	5%	1/4W
R423	1-249-437-11	CARBON	47K	5%	1/4W
R424	1-249-434-11	CARBON	27K	5%	1/4W
R425	1-249-441-11	CARBON	100K	5%	1/4W
R426	1-249-434-11	CARBON	27K	5%	1/4W
R854	1-215-439-00	METAL	5.6K	1%	1/6W
R855	1-215-423-00	METAL	1.2K	1%	1/6W
R858	1-249-437-11	CARBON	47K	5%	1/4W
R859	1-249-429-11	CARBON	10K	5%	1/4W
R860	1-249-435-11	CARBON	33K	5%	1/4W
R861	1-249-440-11	CARBON	82K	5%	1/4W
R866	1-249-393-11	CARBON	10	5%	1/4W F
R868	1-249-433-11	CARBON	22K	5%	1/4W
R869	1-249-389-11	CARBON	4.7	5%	1/4W F (770HF/771HF)
R869	1-249-395-11	CARBON	15	5%	1/4W F (920HF)
R870	1-249-434-11	CARBON	27K	5%	1/4W (920HF)
R871	1-249-394-11	CARBON	12	5%	1/6W F (920HF)
R880	1-249-429-11	CARBON	10K	5%	1/4W (770HF/771HF)
R898	1-249-417-11	CARBON	1K	5%	1/4W F (920HF)
R899	1-249-417-11	CARBON	1K	5%	1/4W F

< VARIABLE RESISTOR >

RV201	1-238-019-11	RES, ADJ, CARBON 47K	
RV202	1-238-019-11	RES, ADJ, CARBON 47K	
RV851	1-241-767-21	RES, ADJ, CARBON 100K	(920HF)

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S001	1-570-953-11	SWITCH, PUSH (1 KEY) (CASSETTE UP/DOWN)	
S002	1-570-953-11	SWITCH, PUSH (1 KEY) (REC PROOF)	
		< TRANSFORMER >	
T851	1-423-413-11	TRANSFORMER, BIAS OSCILLATION	(920HF)
T851	1-423-414-11	TRANSFORMER, BIAS OSCILLATION	(770HF/771HF)
T852	1-423-415-11	TRANSFORMER, BIAS OSCILLATION	(920HF)
		< VIBRATOR >	
X201	1-578-774-11	VIBRATOR, CRYSTAL (12MHz)	
**********			
*	A-6721-584-A	MF-226 BOARD, COMPLETE **********	(770HF:US/771HF/920HF:US)
*	A-6721-606-A	MF-226 BOARD, COMPLETE **********	(770HF:CND/920HF:CND, MX, CS, PL, PX, JE) (Ref.NO. 5,000 Series)
*	3-957-314-11	HOLDER, LCD	
	3-957-327-01	RIVET, PUSH	
	3-957-338-01	ILLUMINATOR	
	3-697-607-01	HOLDER, LED	
		< CAPACITOR >	

C301	1-126-157-11	ELECT	10uF	20%	16V
C302	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C303	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C304	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C305	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C306	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C320	1-126-176-11	ELECT	220uF	20%	10V

< CONNECTOR >

* CN301	1-750-192-21	CONNECTOR, BOARD TO BOARD 22P
* CN303	1-695-329-31	PIN, CONNECTOR (PC BOARD) 6P
* CN304	1-564-014-51	PIN, CONNECTOR 4P

< DIODE >

D301	8-719-940-XX	DIODE	SLR-34VCA49 (REC)
D302	8-719-940-XX	DIODE	SLR-34VCA49 (TIMER)
D303	8-719-946-30	LED	SLR34DC3 (PAUSE)
D304	8-719-812-32	LED	TLY123 (HI-SPEED REW/ND)
D305	8-719-801-78	DIODE	1SS184
D306	8-719-109-93	DIODE	RD6.2ES-B2
D307	8-719-109-93	DIODE	RD6.2ES-B2

Ref.No.	Part No.	Description			Remark
D308	8-719-109-93	DIODE RD6.2ES-B2			
D309	8-719-109-93	DIODE RD6.2ES-B2			
D310	8-719-109-93	DIODE RD6.2ES-B2			
		< IC >			
IC301	8-759-249-78	IC LC75850E			
		< JUMPER RESISTOR >			
JR302	1-216-296-00	METAL CHIP	0	5%	1/8W
JR303	1-216-296-00	METAL CHIP	0	5%	1/8W
		< LIQUID CRYSTAL >			
LC301	1-810-353-11	DISPLAY PANEL, LIQUID CRYSTAL			
		< COIL >			
L301	1-408-401-00	INDUCTOR 2.2uH			
L302	1-410-509-11	INDUCTOR 10uH			
		< TRANSISTOR >			
Q301	8-729-421-19	TRANSISTOR UN2213			
Q302	8-729-421-19	TRANSISTOR UN2213			
Q303	8-729-421-19	TRANSISTOR UN2213			
Q304	8-729-421-19	TRANSISTOR UN2213			
Q305	8-729-421-19	TRANSISTOR UN2213			
Q307	8-729-216-22	TRANSISTOR 2SA1162-G			
		< RESISTOR >			
R301	1-249-421-11	CARBON	2.2K	5%	1/4W F
R302	1-249-429-11	CARBON	10K	5%	1/4W
R303	1-216-073-00	METAL CHIP	10K	5%	1/10W
R304	1-216-035-00	METAL CHIP	270	5%	1/10W
R305	1-216-035-00	METAL CHIP	270	5%	1/10W
R306	1-216-037-00	METAL CHIP	330	5%	1/10W
R307	1-249-408-11	CARBON	180	5%	1/4W F
R308	1-216-031-00	METAL CHIP	180	5%	1/10W
R309	1-216-031-00	METAL CHIP	180	5%	1/10W
R310	1-216-031-00	METAL CHIP	180	5%	1/10W
R311	1-216-031-00	METAL CHIP	180	5%	1/10W
R312	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R313	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R317	1-216-073-00	METAL CHIP	10K	5%	1/10W
R318	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R319	1-216-013-00	METAL CHIP	33	5%	1/10W
R320	1-216-013-00	METAL CHIP	33	5%	1/10W
R321	1-216-262-00	METAL GLAZE	470K	5%	1/8W
R322	1-216-113-00	METAL CHIP	470K	5%	1/10W
R323	1-216-262-00	METAL GLAZE	470K	5%	1/8W

Ref.No.	Part No.	Description			Remark
R324	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R325	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
		< SWITCH >			
S301	1-571-977-11	SWITCH, TACTIL (HI-SPEED REW/ND)			
S302	1-571-977-11	SWITCH, TACTIL (PAUSE)			
S303	1-692-726-11	SWITCH, ROTARY (LED) (PLAY/STOP/REW/FF)			
**********					
*	A-6720-582-A	MF-227 BOARD, COMPLETE (920HF)			
		**********			
*	A-6720-583-A	MF-227 BOARD, COMPLETE (770HF/771HF)			
		**********			
		(Ref.NO. 5,000 Series)			
		< CAPACITOR >			
C605	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN601	1-695-820-11	CONNECTOR, BOARD TO BOARD 12P			
		< DIODE >			
D601	8-719-970-67	DIODE SLR-34MCA49 (POWER)			
D602	8-719-970-67	DIODE SLR-34MCA49 (POWER)			
D606	8-719-108-12	DIODE RD9.1E-W			
D607	8-719-108-12	DIODE RD9.1E-W			
D608	8-719-108-12	DIODE RD9.1E-W			
D610	8-719-109-93	DIODE RD6.2ES-B2			
		< IC >			
IC601	1-466-833-11	IC RAY-CATCHER BLOCK, REMOCON			
		< JACK >			
PJ601	1-695-865-11	JACK, PIN 3P (LINE IN 2)			
		< TRANSISTOR >			
Q601	8-729-421-19	TRANSISTOR UN2213			
		< RESISTOR >			
R601	1-216-238-91	METAL GLAZE	47K	5%	1/8W
R603	1-216-295-00	METAL CHIP	0	5%	1/10W
R604	1-216-295-00	METAL CHIP	0	5%	1/10W
R605	1-216-170-00	METAL GLAZE	68	5%	1/8W
R607	1-216-057-00	METAL CHIP	2.2K	5%	1/10W

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S601	1-571-977-11	SWITCH, TACTIL (POWER)	
S602	1-571-977-11	SWITCH, TACTIL (EJECT)	
**********			
*	A-6720-585-A	PL-24 BOARD, COMPLATE	
		********** (Ref. NO. 5,000 Series)	
		< CONNECTOR >	
CN601	1-506-469-11	PIN, CONNECTOR 4P	
		< DIODE >	
D601	8-719-047-06	DIODE SEL3713K (LCD BAK LIGHT)	
D602	8-719-047-06	DIODE SEL3713K (LCD BAK LIGHT)	
D603	8-719-047-06	DIODE SEL3713K (LCD BAK LIGHT)	
D604	8-719-047-06	DIODE SEL3713K (LCD BAK LIGHT)	
		< PILOT LAMP >	
PL601	1-517-254-11	LAMP, PILOT (LCD BACK LIGHT)	
PL602	1-517-254-11	LAMP, PILOT (LCD BAK LIGHT)	
PL603	1-517-254-11	LAMP, PILOT (LCD BAK LIGHT)	
**********			
*⚠	A-6727-522-A	PT-95 BOARD, COMPLETE (920HF:US, CND, MX)	
		**********	
*⚠	A-6727-524-A	PT-95 BOARD, COMPLETE (770HF/771HF)	
		**********	
*⚠	A-6727-553-A	PT-95 BOARD, COMPLETE (920HF:CS, PL, PX, JE)	
		********** (Ref. NO. 3,000 Series)	
	1-558-924-21	CABLE, PIN	
*	3-951-893-01	HEAT SINK	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
		< BUZZER >	
BZ401	1-529-080-11	BUZZER, PIEZOELECTRIC	
		< CAPACITOR >	
⚠C101	1-104-705-11	FILM 0.1uF 20% 250V	
⚠C102	1-104-705-11	FILM 0.1uF 20% 250V	
⚠C103	1-107-401-11	ELECT 150uF 20% 200V (770HF/771HF/920HF:US, CND, MX)	
⚠C103	1-107-414-11	ELECT 220uF 20% 400V (920HF:CS, PL, PX, JE)	
⚠C104	1-161-740-00	CERAMIC 470PF 10% 400V (770HF/771HF/920HF:US, CND, MX)	
⚠C104	1-161-741-00	CERAMIC 0.001uF 10% 400V (920HF:CS, PL, PX, JE)	
⚠C105	1-161-740-00	CERAMIC 470PF 10% 400V (770HF/771HF/920HF:US, CND, MX)	
⚠C105	1-161-741-00	CERAMIC 0.001uF 10% 400V (920HF:CS, PL, PX, JE)	
⚠C106	1-161-741-00	CERAMIC 0.001uF 10% 400V (920HF:CS, PL, PX, JE)	
⚠C107	1-104-973-21	CERAMIC 0.0015uF 20% 400V (770HF/771HF/920HF:US, CND, MX)	
⚠C107	1-161-741-00	CERAMIC 0.001uF 10% 400V (920HF:CS, PL, PX, JE)	
⚠C108	1-161-741-00	CERAMIC 0.001uF 10% 400V (920HF:CS, PL, PX, JE)	
C121	1-126-103-11	ELECT 470uF 20% 16V	
C122	1-124-471-00	ELECT 1000uF 20% 6.3V	
C125	1-126-233-11	ELECT 22uF 20% 50V	
C131	1-124-120-11	ELECT 220uF 20% 25V	
C132	1-126-233-11	ELECT 22uF 20% 50V	
C141	1-124-477-11	ELECT 47uF 20% 25V	
C142	1-126-101-11	ELECT 100uF 20% 16V	
C152	1-124-443-00	ELECT 100uF 20% 10V	
C161	1-124-126-00	ELECT 47uF 20% 10V	
C162	1-124-442-00	ELECT 330uF 20% 6.3V	
C171	1-124-442-00	ELECT 330uF 20% 6.3V	
C181	1-124-589-11	ELECT 47uF 20% 16V	
C182	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C183	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C184	1-126-157-11	ELECT 10uF 20% 16V	
C185	1-124-261-00	ELECT 10uF 20% 50V	
C186	1-124-261-00	ELECT 10uF 20% 50V	
C187	1-124-261-00	ELECT 10uF 20% 50V	
C189	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C190	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C195	1-124-589-11	ELECT 47uF 20% 16V	
C196	1-124-589-11	ELECT 47uF 20% 16V	
C197	1-124-589-11	ELECT 47uF 20% 16V	
C401	1-124-257-00	ELECT 2.2uF 20% 50V	
C402	1-163-205-00	CERAMIC CHIP 0.001uF 5% 50V	
C404	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C405	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C406	1-125-705-11	CAP, DOUBLE LAYERS 0.22F	
C407	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C408	1-124-442-00	ELECT 330uF 20% 6.3V	
C409	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C410	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C411	1-163-239-11	CERAMIC CHIP 33PF 5% 50V	
C412	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C414	1-163-031-11	CERAMIC CHIP 0.01uF 50V	

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Ref. No.	Part No.	Description			Remark
C415	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C451	1-124-443-00	ELECT	100uF	20%	10V
C452	1-124-584-00	ELECT	100uF	20%	10V
C804	1-126-233-11	ELECT	22uF	20%	50V
C808	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C809	1-126-101-11	ELECT	100uF	20%	16V
C810	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C811	1-124-927-11	ELECT	4.7uF	20%	100V
C812	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C813	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C814	1-124-126-00	ELECT	47uF	20%	10V
C817	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C819	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C820	1-124-126-00	ELECT	47uF	20%	10V
C824	1-124-907-11	ELECT	10uF	20%	50V
C825	1-124-907-11	ELECT	10uF	20%	50V
C826	1-124-907-11	ELECT	10uF	20%	50V
C828	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C829	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C830	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C836	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C863	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C865	1-163-031-11	CERAMIC CHIP	0.01uF		50V
		< JACK >			
⚠CJ101	1-251-134-11	INLET, AC(NONPOLAR) (920HF:CS, PL, PX, JE)			
⚠CJ101	1-251-135-11	INLET, AC. (770HF/771HF/920HF:US, CND, MX)			
CJ401	1-691-258-21	JACK (CABLE BOX CONTROL)			
CJ402	1-507-562-00	JACK (CONTROL S IN)			
		< CONNECTOR >			
CN401	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P			
CN402	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P			
* CN403	1-750-201-21	CONNECTOR, BOARD TO BOARD 22P			
* CN404	1-573-845-11	CONNECTOR, BOARD TO BOARD 13P			
* CN405	1-573-845-11	CONNECTOR, BOARD TO BOARD 13P			
		< COMPOSITION CIRCUIT BLOCK >			
⚠CP101	1-413-895-11	POWER BLOCK			
⚠CP101	1-413-896-11	POWER BLOCK (920HF:CS, PL, PX, JE)			
		< TRIMMER >			
CT412	1-141-442-91	TRIMMER, CERAMIC			
		< DIODE >			
⚠D101	8-719-510-06	DIODE S1WB60			
⚠D131	8-719-200-82	DIODE 11ES2			
D161	8-719-911-19	DIODE 1SS119			
D162	8-719-109-85	DIODE RD5.1ES-B2			
⚠D181	8-719-911-19	DIODE 1SS119			
⚠D182	8-719-911-19	DIODE 1SS119			
⚠D183	8-719-911-19	DIODE 1SS119			
⚠D184	8-719-911-19	DIODE 1SS119			
⚠D195	8-719-911-19	DIODE 1SS119			
⚠D196	8-719-911-19	DIODE 1SS119			
D401	8-719-801-78	DIODE 1SS184			
D402	8-719-200-82	DIODE 11ES2			
⚠D403	8-719-200-82	DIODE 11ES2			
D404	8-719-911-19	DIODE 1SS119			
D491	8-719-109-96	DIODE RD6.8ES-B1			
D492	8-719-109-96	DIODE RD6.8ES-B1			
D493	8-719-109-96	DIODE RD6.8ES-B1			
⚠D801	8-719-110-78	DIODE RD33ES-B2			
D802	8-719-800-76	DIODE 1SS226			
D803	8-719-911-19	DIODE 1SS119			
⚠D865	8-719-200-82	DIODE 11ES2			
		< FUSE >			
⚠F101	1-532-743-11	FUSE, GLASS CYLINDRICAL(DIA.5)(2A 125V) (770HF/771HF/920HF:US, CND, MX)			
⚠F101	1-576-228-11	FUSE (H.B.C.)(2A 125V)(920HF:CS, PL, PX, JE)			
		< FUSE HOLDER >			
* FH101	1-533-293-11	FUSE HOLDER			
* FH102	1-533-293-11	FUSE HOLDER			
		< FILTER >			
FL184	1-239-803-11	FILTER, EMI			
FL195	1-239-803-11	FILTER, EMI			
		< IC >			
⚠IC141	8-759-189-48	IC PQ12RE11			
⚠IC151	8-759-189-49	IC PQ09NF1S			
⚠IC181	8-759-189-47	IC MC34151DR2			
IC401	8-759-247-48	IC MB89096-120			
IC402	8-759-502-00	IC ST93CS56B1			
IC405	8-759-249-28	IC MM1254XFBE			
		< JUMPER RESISTOR >			
JR111	1-216-296-00	METAL CHIP	0	5%	1/8W
JR151	1-216-295-00	METAL CHIP	0	5%	1/10W
JR401	1-216-296-00	METAL CHIP	0	5%	1/8W
JR402	1-216-296-00	METAL CHIP	0	5%	1/8W
JR403	1-216-296-00	METAL CHIP	0	5%	1/8W
JR404	1-216-296-00	METAL CHIP	0	5%	1/8W

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Ref. No.	Part No.	Description			Remark
JR405	1-216-296-00	METAL CHIP	0	5%	1/8W
JR406	1-216-295-00	METAL CHIP	0	5%	1/10W
JR407	1-216-296-00	METAL CHIP	0	5%	1/8W
JR408	1-216-296-00	METAL CHIP	0	5%	1/8W
JR409	1-216-296-00	METAL CHIP	0	5%	1/8W
JR410	1-216-296-00	METAL CHIP	0	5%	1/8W
JR412	1-216-296-00	METAL CHIP	0	5%	1/8W
JR413	1-216-296-00	METAL CHIP	0	5%	1/8W
JR444	1-216-296-00	METAL CHIP	0	5%	1/8W
JR802	1-216-296-00	METAL CHIP	0	5%	1/8W
JR803	1-216-295-00	METAL CHIP	0	5%	1/10W
JR811	1-216-296-00	METAL CHIP	0	5%	1/8W
JW441	1-410-396-41	FERRITE BEAD INDUCTOR			
JW455	1-410-509-11	INDUCTOR 10uH			
		< COIL >			
⚠L121	1-403-588-11	CIL, CHOKE 22uH			
⚠L122	1-403-588-11	CIL, CHOKE 22uH			
L181	1-408-421-00	INDUCTOR 100uH			
L182	1-410-521-11	INDUCTOR 100uH			
L195	1-410-521-11	INDUCTOR 100uH			
L404	1-414-183-41	INDUCTOR 10uH			
L460	1-410-509-11	INDUCTOR 10uH			
L801	1-414-189-31	INDUCTOR 100uH			
L802	1-414-183-41	INDUCTOR 10uH			
L804	1-414-183-41	INDUCTOR 10uH			
L861	1-408-401-00	INDUCTOR 2.2uH			
		< LINE FILTER >			
⚠LF101	1-424-117-11	FILTER, LINE			
⚠LF102	1-424-117-11	FILTER, LINE (920HF:CS, PL, PX, JE)			
		< IC LINK >			
⚠PS121	1-532-637-00	LINK, IC 1.0A			
⚠PS123	1-532-675-00	LINK, IC 1.5A			
⚠PS801	1-532-679-00	LINK, IC			
		< TRANSISTOR >			
⚠Q131	8-729-140-93	TRANSISTOR 2SB733-34			
Q132	8-729-421-22	TRANSISTOR UN2211			
⚠Q161	8-729-140-98	TRANSISTOR 2SD773-34			
Q401	8-729-424-18	TRANSISTOR UN2113			
Q402	8-729-421-19	TRANSISTOR UN2213			
Q420	8-729-216-22	TRANSISTOR 2SA1162-G			
Q451	8-729-018-99	TRANSISTOR 2SD2394-F			
Q452	8-729-902-XX	TRANSISTOR DTC114TK-T146			
Q453	8-729-902-XX	TRANSISTOR DTC114TK-T146			
⚠Q801	8-729-173-38	TRANSISTOR 2SA733-K			
Q802	8-729-422-27	TRANSISTOR 2SD601A-Q			
Q803	8-729-422-27	TRANSISTOR 2SD601A-Q			
Q804	8-729-422-27	TRANSISTOR 2SD601A-Q			
		< RESISTOR >			
R101	1-214-947-00	METAL	2.7M	1%	1/2W (920HF:CS, PL, PX, JE)
R102	1-202-729-00	SOLID	6.8M	20%	1/2W (770HF/771HF/920HF:US, CND, MX)
R125	1-249-423-11	CARBON	3.3K	5%	1/4W F
R131	1-249-417-11	CARBON	1K	5%	1/4W F
R132	1-260-099-11	CARBON	1K	5%	1/2W
R133	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R161	1-249-412-11	CARBON	390	5%	1/4W F
R181	1-216-081-00	METAL CHIP	22K	5%	1/10W
R182	1-216-073-00	METAL CHIP	10K	5%	1/10W
R401	1-216-056-00	METAL GLAZE	2K	5%	1/10W
R405	1-216-095-00	METAL CHIP	82K	5%	1/10W
R407	1-216-113-00	METAL CHIP	470K	5%	1/10W
R408	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R409	1-216-049-00	METAL CHIP	1K	5%	1/10W
R412	1-216-049-00	METAL CHIP	1K	5%	1/10W
R420	1-216-081-00	METAL CHIP	22K	5%	1/10W
R421	1-216-049-00	METAL CHIP	1K	5%	1/10W
R431	1-216-049-00	METAL CHIP	1K	5%	1/10W
R432	1-216-198-91	METAL GLAZE	1K	5%	1/8W
R433	1-249-417-11	CARBON	1K	5%	1/4W F
R453	1-216-047-00	METAL CHIP	820	5%	1/10W
R454	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R455	1-216-073-00	METAL CHIP	10K	5%	1/10W
R457	1-216-073-00	METAL CHIP	10K	5%	1/10W
R459	1-260-087-11	CARBON	100	5%	1/2W
R460	1-216-073-00	METAL CHIP	10K	5%	1/10W
R462	1-216-296-00	METAL CHIP	0	5%	1/8W
R463	1-249-417-11	CARBON	1K	5%	1/4W F
R464	1-249-417-11	CARBON	1K	5%	1/4W F
R465	1-249-417-11	CARBON	1K	5%	1/4W F
R466	1-249-417-11	CARBON	1K	5%	1/4W F
R467	1-249-417-11	CARBON	1K	5%	1/4W F
R469	1-216-073-00	METAL CHIP	10K	5%	1/10W
R470	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (920HF:US, MX, CS, PL, PX, JE)
R470	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (770HF:CND)
R470	1-216-071-00	METAL CHIP	8.2K	5%	1/10W (920HF:CND)
R470	1-216-295-00	METAL CHIP	0	5%	1/10W (770HF:US/771HF)
R471	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R473	1-216-049-00	METAL CHIP	1K	5%	1/10W
R474	1-216-049-00	METAL CHIP	1K	5%	1/10W
R475	1-216-049-00	METAL CHIP	1K	5%	1/10W

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Ref. No.	Part No.	Description			Remark
R478	1-249-417-11	CARBON	1K	5%	1/4W F
R484	1-216-049-00	METAL CHIP	1K	5%	1/10W
R485	1-249-417-11	CARBON	1K	5%	1/4W F
R487	1-216-049-00	METAL CHIP	1K	5%	1/10W
R488	1-216-295-00	METAL CHIP	0	5%	1/10W
R491	1-216-296-00	METAL CHIP	0	5%	1/8W
R492	1-216-295-00	METAL CHIP	0	5%	1/10W
R801	1-216-198-91	METAL GLAZE	1K	5%	1/8W
R802	1-216-198-91	METAL GLAZE	1K	5%	1/8W
R803	1-216-182-91	METAL GLAZE	220	5%	1/8W
R804	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R805	1-216-025-00	METAL CHIP	100	5%	1/10W
R806	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R807	1-216-075-00	METAL CHIP	12K	5%	1/10W
R808	1-216-049-00	METAL CHIP	1K	5%	1/10W
R810	1-216-025-00	METAL CHIP	100	5%	1/10W
R811	1-216-037-00	METAL CHIP	330	5%	1/10W
R812	1-216-037-00	METAL CHIP	330	5%	1/10W
R813	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R816	1-216-081-00	METAL CHIP	22K	5%	1/10W
R823	1-216-049-00	METAL CHIP	1K	5%	1/10W
R824	1-249-417-11	CARBON	1K	5%	1/4W F
R825	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R826	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R827	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R828	1-216-093-00	METAL CHIP	68K	5%	1/10W
R836	1-216-198-91	METAL GLAZE	1K	5%	1/8W
R862	1-216-295-00	METAL CHIP	0	5%	1/10W
R863	1-216-049-00	METAL CHIP	1K	5%	1/10W
		< RF MODULATOR >			
⚠RF801	1-466-989-11	MODULATOR, RF			
		< TUNER >			
⚠TU802	8-598-039-10	TUNER BTF-WA401			
		< VIBRATOR >			
X401	1-579-436-11	VIBLATOR, CRYSTAL (32KHz)			
X402	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			

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* A-6727-523-A RV-33 BOARD, COMPLETE (920HF)
****

* A-6727-525-A RV-33 BOARD, COMPLETE (770HF/771HF)
****
(Ref. NO. 1,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C001	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C002	1-164-699-11	CERAMIC CHIP	0.0033uF	5%	50V
C003	1-124-465-00	ELECT	0.47uF	20%	50V
C004	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C005	1-163-114-00	CERAMIC CHIP	75PF	5%	50V
C006	1-124-257-00	ELECT	2.2uF	20%	50V
C007	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C010	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C011	1-124-463-00	ELECT	0.1uF	20%	50V
C012	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C013	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C016	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C018	1-126-163-11	ELECT	4.7uF	20%	50V
C019	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C026	1-126-157-11	ELECT	10uF	20%	16V
C027	1-163-104-00	CERAMIC CHIP	30PF	5%	50V
C029	1-124-465-00	ELECT	0.47uF	20%	50V
C030	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C031	1-124-638-11	ELECT	22uF	20%	10V
C032	1-126-157-11	ELECT	10uF	20%	16V (920HF)
C032	1-126-162-11	ELECT	3.3uF	20%	50V
C033	1-124-638-11	ELECT	22uF	20%	10V
C034	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C036	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C038	1-163-087-00	CERAMIC CHIP	4PF		50V
C039	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C043	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C045	1-124-257-00	ELECT	2.2uF	20%	50V
C046	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C047	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C048	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C049	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C050	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C051	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C052	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C053	1-124-465-00	ELECT	0.47uF	20%	50V
C055	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C056	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C057	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C058	1-124-465-00	ELECT	0.47uF	20%	50V
C059	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C060	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C061	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C062	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C063	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C064	1-124-638-11	ELECT	22uF	20%	10V

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Ref. No.	Part No.	Description			Remark
C065	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C066	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C067	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C073	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C075	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C079	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C081	1-163-089-00	CERAMIC CHIP	6PF		50V
C083	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C086	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C087	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C098	1-124-638-11	ELECT	22uF	20%	10V
C099	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C102	1-163-130-00	CERAMIC CHIP	360PF	5%	50V
C120	1-124-638-11	ELECT	22uF	20%	10V
C121	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C260	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C261	1-124-584-00	ELECT	100uF	20%	10V
C262	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C263	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C264	1-124-257-00	ELECT	2.2uF	20%	50V
C265	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C267	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C268	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C269	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C270	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C273	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C274	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C275	1-126-160-11	ELECT	1uF	20%	50V
C276	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C801	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C802	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C803	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C804	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C805	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C806	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C807	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C808	1-124-584-00	ELECT	100uF	20%	10V
C809	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C810	1-124-584-00	ELECT	100uF	20%	10V
C811	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C813	1-164-336-11	CERAMIC CHIP	0.33uF		25V
C814	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C815	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C816	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C817	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C818	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C822	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C826	1-124-229-00	ELECT	33uF	20%	10V
C827	1-163-038-00	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remark
C829	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C830	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C836	1-163-099-00	CERAMIC CHIP	18PF	5%	50V (920HF)
C839	1-163-099-00	CERAMIC CHIP	18PF	5%	50V (920HF)
C890	1-164-232-11	CERAMIC CHIP	0.01uF		50V (920HF)
C893	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (920HF)
C894	1-163-121-00	CERAMIC CHIP	150PF	5%	50V (920HF)
C895	1-163-245-11	CERAMIC CHIP	56PF	5%	50V (920HF)
C896	1-163-038-00	CERAMIC CHIP	0.1uF		25V (920HF)
C897	1-126-157-11	ELECT	10uF	20%	16V (920HF)
C901	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C902	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C903	1-163-087-00	CERAMIC CHIP	4PF		50V
C904	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C907	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C908	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C909	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C910	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C911	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C912	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C913	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C914	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C916	1-216-295-00	METAL CHIP	0	5%	1/10W
C917	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C918	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C920	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C921	1-124-638-11	ELECT	22uF	20%	10V

< CONNECTOR >

CN001	1-573-828-11	CONNECTOR, BOARD TO BOARD	14P
CN002	1-573-834-11	CONNECTOR, BOARD TO BOARD	20P
CN801	1-563-590-11	CONNECTOR, FLEXIBLE	13P
* CN802	1-564-029-00	PIN, CONNECTOR	4P
* CN803	1-564-013-11	PIN, CONNECTOR	3P

< DIODE >

D801	8-719-801-78	DIODE 1SS184
D802	8-719-801-78	DIODE 1SS184
D803	8-719-801-78	DIODE 1SS184
D901	8-719-951-22	IC IMN10

Ref. No.	Part No.	Description	Remark
		< DELAY LINE >	
DL001	1-415-668-11	DELAY LINE, ULTRASONIC	
DL001	1-415-668-31	DELAY LINE, ULTRASONIC	
		< IC >	
IC001	8-759-183-95	IC HA118385FEB	
IC003	8-759-194-19	IC MSM7450MS-K-TP	
IC260	8-759-055-49	IC AN3327K	
IC801	8-759-194-25	IC HA118191NT	
		< JUMPER RESISTOR >	
JR001	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR022	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< COIL >	
L001	1-408-970-21	INDUCTOR 10uH	
L002	1-408-975-21	INDUCTOR 27uH	
L003	1-408-970-21	INDUCTOR 10uH	
L006	1-408-976-21	INDUCTOR 33uH	
L007	1-408-982-11	INDUCTOR 100uH	
L008	1-408-982-11	INDUCTOR 100uH	
L009	1-408-980-21	INDUCTOR 68uH	
L010	1-408-976-21	INDUCTOR 33uH	
L011	1-408-983-21	INDUCTOR 120uH	
L012	1-408-429-00	INDUCTOR 470uH	
L013	1-408-427-00	INDUCTOR 330uH	
L014	1-408-978-21	INDUCTOR 47uH	
L015	1-408-982-11	INDUCTOR 100uH	
L017	1-408-948-00	INDUCTOR 220uH	
L018	1-408-982-11	INDUCTOR 100uH	
L260	1-408-982-11	INDUCTOR 100uH	
L801	1-408-948-00	INDUCTOR 220uH	
L802	1-408-948-00	INDUCTOR 220uH	
L803	1-408-982-11	INDUCTOR 100uH	
L804	1-408-982-11	INDUCTOR 100uH	
L810	1-408-985-21	INDUCTOR 180uH	
L812	1-408-982-11	INDUCTOR 100uH	
L813	1-408-970-21	INDUCTOR 10uH (920HF)	
L814	1-408-970-21	INDUCTOR 10uH (920HF)	
L890	1-408-968-21	INDUCTOR 6.8uH (920HF)	
L891	1-408-982-11	INDUCTOR 100uH (920HF)	
L901	1-408-977-21	INDUCTOR 39uH	
L902	1-408-948-00	INDUCTOR 220uH	
L908	1-408-982-11	INDUCTOR 100uH	
L909	1-408-977-21	INDUCTOR 39uH	
		< TRANSISTOR >	
Q003	8-729-010-25	TRANSISTOR MSD601-RT1	
Q004	8-729-010-25	TRANSISTOR MSD601-RT1	
Q006	8-729-010-25	TRANSISTOR MSD601-RT1	
Q007	8-729-010-05	TRANSISTOR MSB709-RT1	
Q011	8-729-010-25	TRANSISTOR MSD601-RT1	
Q013	8-729-010-25	TRANSISTOR MSD601-RT1	
Q016	8-729-424-56	TRANSISTOR UN211L	
Q018	8-729-424-18	TRANSISTOR UN2113	
Q021	8-729-421-19	TRANSISTOR UN2213	
Q029	8-729-421-19	TRANSISTOR UN2213	
Q030	8-729-421-19	TRANSISTOR UN2213	
Q031	8-729-424-08	TRANSISTOR UN2111	
Q034	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q040	8-729-421-19	TRANSISTOR UN2213	
Q051	8-729-421-19	TRANSISTOR UN2213	
Q810	8-729-421-19	TRANSISTOR UN2213	
Q811	8-729-921-12	TRANSISTOR 2SD1834	
Q817	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q818	8-729-421-19	TRANSISTOR UN2213	
Q819	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q840	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q841	8-729-216-21	TRANSISTOR 2SA1162Y	
Q890	8-729-216-22	TRANSISTOR 2SA1162-G (920HF)	
Q891	8-729-216-22	TRANSISTOR 2SA1162-G (920HF)	
Q892	8-729-421-19	TRANSISTOR UN2213 (920HF)	
Q904	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q906	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q907	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q908	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q909	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q911	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q912	8-729-216-21	TRANSISTOR 2SA1162Y	
Q936	8-729-424-08	TRANSISTOR UN2111	
		< RESISTOR >	
R001	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R002	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R003	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R010	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R012	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R014	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R016	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R018	1-216-037-00	METAL CHIP 330 5% 1/10W	
R019	1-216-037-00	METAL CHIP 330 5% 1/10W	
R020	1-216-040-00	METAL GLAZE 430 5% 1/10W	
R021	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R027	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R029	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R030	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R040	1-216-121-00	METAL CHIP 1M 5% 1/10W	

Ref. No.	Part No.	Description			Remark
R041	1-216-033-00	METAL CHIP	220	5%	1/10W
R042	1-216-043-00	METAL CHIP	560	5%	1/10W
R043	1-216-043-00	METAL CHIP	560	5%	1/10W
R044	1-216-077-00	METAL CHIP	15K	5%	1/10W
R045	1-216-058-00	METAL GLAZE	2.4K	5%	1/10W
R046	1-216-045-00	METAL CHIP	680	5%	1/10W
R047	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R048	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R049	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R050	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R051	1-216-036-00	METAL CHIP	300	5%	1/10W
R052	1-216-052-00	METAL CHIP	1.3K	5%	1/10W
R053	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R055	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R056	1-216-077-00	METAL CHIP	15K	5%	1/10W
R057	1-216-049-00	METAL CHIP	1K	5%	1/10W
R058	1-216-049-00	METAL CHIP	1K	5%	1/10W
R059	1-216-037-00	METAL CHIP	330	5%	1/10W
R060	1-216-043-00	METAL CHIP	560	5%	1/10W
R065	1-216-073-00	METAL CHIP	10K	5%	1/10W
R066	1-216-073-00	METAL CHIP	10K	5%	1/10W
R067	1-216-295-00	METAL CHIP	0	5%	1/10W
R069	1-216-047-00	METAL CHIP	820	5%	1/10W
R071	1-216-058-00	METAL GLAZE	2.4K	5%	1/10W
R072	1-216-072-00	METAL CHIP	9.1K	5%	1/10W
R077	1-216-085-00	METAL CHIP	33K	5%	1/10W
R078	1-216-081-00	METAL CHIP	22K	5%	1/10W
R079	1-216-073-00	METAL CHIP	10K	5%	1/10W
R080	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R082	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R083	1-216-083-00	METAL CHIP	27K	5%	1/10W
R084	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R085	1-216-045-00	METAL CHIP	680	5%	1/10W
R086	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R088	1-216-075-00	METAL CHIP	12K	5%	1/10W
R091	1-216-295-00	METAL CHIP	0	5%	1/10W
R094	1-216-073-00	METAL CHIP	10K	5%	1/10W
R099	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R102	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R113	1-216-295-00	METAL CHIP	0	5%	1/10W
R119	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R262	1-216-035-00	METAL CHIP	270	5%	1/10W
R263	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R265	1-216-033-00	METAL CHIP	220	5%	1/10W
R266	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R267	1-216-035-00	METAL CHIP	270	5%	1/10W
R268	1-216-097-00	METAL CHIP	100K	5%	1/10W
R271	1-216-079-00	METAL CHIP	18K	5%	1/10W
R276	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R801	1-216-023-00	METAL CHIP	82	5%	1/10W
R802	1-216-037-00	METAL CHIP	330	5%	1/10W
R805	1-216-606-11	METAL CHIP	13	0.50%	1/10W
R806	1-216-023-00	METAL CHIP	82	5%	1/10W
R807	1-216-023-00	METAL CHIP	82	5%	1/10W
R811	1-216-037-00	METAL CHIP	330	5%	1/10W
R812	1-216-023-00	METAL CHIP	82	5%	1/10W
R815	1-216-081-00	METAL CHIP	22K	5%	1/10W
R816	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R817	1-216-049-00	METAL CHIP	1K	5%	1/10W
R835	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R836	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R838	1-216-075-00	METAL CHIP	12K	5%	1/10W
R842	1-216-619-11	METAL CHIP	47	0.5%	1/10W
R843	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R844	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R846	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R847	1-216-078-00	METAL GLAZE	16K	5%	1/10W
R856	1-216-033-00	METAL CHIP	220	5%	1/10W
R857	1-216-033-00	METAL CHIP	220	5%	1/10W
R858	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R859	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R861	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R862	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R863	1-216-047-00	METAL CHIP	820	5%	1/10W
R891	1-216-011-00	METAL CHIP	27	5%	1/10W (920HF)
R894	1-216-041-00	METAL CHIP	470	5%	1/10W (920HF)
R895	1-216-054-00	METAL GLAZE	1.6K	5%	1/10W (920HF)
R896	1-216-095-00	METAL CHIP	82K	5%	1/10W (920HF)
R897	1-216-089-91	METAL GLAZE	47K	5%	1/10W (920HF)
R898	1-216-689-11	METAL CHIP	39K	0.5%	1/10W (920HF)
R901	1-216-039-00	METAL CHIP	390	5%	1/10W
R902	1-216-033-00	METAL CHIP	220	5%	1/10W
R903	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R904	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R906	1-216-077-00	METAL CHIP	15K	5%	1/10W
R907	1-216-075-00	METAL CHIP	12K	5%	1/10W
R908	1-216-033-00	METAL CHIP	220	5%	1/10W
R910	1-216-025-00	METAL CHIP	100	5%	1/10W
R913	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R914	1-216-077-00	METAL CHIP	15K	5%	1/10W
R915	1-216-075-00	METAL CHIP	12K	5%	1/10W
R916	1-216-039-00	METAL CHIP	390	5%	1/10W
R917	1-216-045-00	METAL CHIP	680	5%	1/10W
R918	1-216-045-00	METAL CHIP	680	5%	1/10W
R919	1-216-039-00	METAL CHIP	390	5%	1/10W
R920	1-216-043-00	METAL CHIP	560	5%	1/10W
R921	1-216-049-00	METAL CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R922	1-216-041-00	METAL CHIP	470	5%	1/10W
R924	1-216-295-00	METAL CHIP	0	5%	1/10W
R925	1-216-045-00	METAL CHIP	680	5%	1/10W
R926	1-216-025-00	METAL CHIP	100	5%	1/10W
R927	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R928	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R929	1-216-043-00	METAL CHIP	560	5%	1/10W
R936	1-216-043-00	METAL CHIP	560	5%	1/10W
R937	1-216-043-00	METAL CHIP	560	5%	1/10W
R938	1-216-047-00	METAL CHIP	820	5%	1/10W
R939	1-216-049-00	METAL CHIP	1K	5%	1/10W
R966	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
		< VARIABLE RESISTOR >			
RV001	1-238-856-11	RES, ADJ, CERMET 10K			
RV003	1-238-856-11	RES, ADJ, CERMET 10K			
RV004	1-238-856-11	RES, ADJ, CERMET 10K			
RV005	1-238-856-11	RES, ADJ, CERMET 10K			
RV006	1-238-857-11	RES, ADJ, CERMET 22K			
RV009	1-238-854-11	RES, ADJ, CERMET 2.2K			
		< TRANSFORMER >			
T001	1-406-967-11	COIL, TUNK			
		< VIBRATOR >			
X001	1-760-119-11	VIBRATOR, CRYSTAL (3.58MHz)			
		MISCELLANEOUS			
1	1-467-386-31	SWITCH BLOCK, CONTROL (920HF:US, CND)			
1	1-467-386-41	SWITCH BLOCK, CONTROL (770HF/771HF)			
1	1-467-386-51	SWITCH BLOCK, CONTROL (920HF:MX, CS, PL, PX, JE)			
260	1-543-647-11	HEAD, FE			
282	8-848-576-01	DRUM ASSY, ROTARY UPPER (DZR-45-R) (770HF/771HF)			
282	8-848-581-01	DRUM ASSY, ROTARY UPPER (DZR-49-R) (920HF)			
M901	8-848-575-11	DRUM ASSY DZH-45A-R (770HF/771HF)			
M901	8-848-580-11	DRUM ASSY DZH-49A-R (920HF)			
M902	8-835-489-01	MOTOR, DC U-26K			
M903	X-3733-302-1	MOTOR ASSY, CAM			
M904	X-3727-784-1	MOTOR ASSY			

Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS	
	1-466-905-11	CABLE MOUSE (770HF/771HF/920HF:US, CND, MX, CS, PL, PX)	
	1-467-383-11	REMOTE COMMANDER (RMT-V140A) (770HF/771HF)	
	1-467-383-21	REMOTE COMMANDER (RMT-V140) (920HF)	
⚠	1-569-008-11	ADAPTER, CONVERSION 2P (920HF:CS, PL, PX, JE)	
⚠	1-575-131-11	CORD, POWER (920HF:CS, PL, PX, JE)	
	1-575-334-11	CORD, CONNECTION (AUDIO/VIDEO CABLE 1.5m)	
	1-696-592-11	CORD, CONNECTION (NTSC) (75-OHM, COAXIAL CABLE 1.5m)	
⚠	1-751-676-11	CORD, POWER (770HF/771HF/920HF:US, CND, MX)	
	3-757-904-21	MANUAL, INSTRUCTION (ENGLISH) (770HF)	
	3-757-904-31	MANUAL, INSTRUCTION (FRENCH) (770HF:CND)	
	3-757-936-11	MANUAL, INSTRUCTION (ENGLISH) (920HF:MX, CS, PL, PX, JE)	
	3-757-936-21	MANUAL, INSTRUCTION (ENGLISH) (920HF:US, CND)	
	3-757-936-31	MANUAL, INSTRUCTION (FRENCH) (920HF:CND)	
	3-757-936-41	MANUAL, INSTRUCTION (SPANISH) (920HF:MX, CS, PL)	
	3-758-520-21	MANUAL, INSTRUCTION (ENGLISH) (771HF)	
*	3-957-411-01	INDIVIDUAL CARTON (770HF)	
*	3-957-411-11	INDIVIDUAL CARTON (771HF/920HF:US, CND)	
*	3-957-412-01	CUSHION (UPPER)	
*	3-957-413-01	CUSHION (LOWER)	
*	3-957-465-11	INDIVIDUAL CARTON (920HF:MX)	
*	3-957-465-21	INDIVIDUAL CARTON (920HF:CS)	
*	3-957-465-31	INDIVIDUAL CARTON (920HF:PL)	
*	3-957-465-41	INDIVIDUAL CARTON (920HF:PX)	
*	3-957-465-51	INDIVIDUAL CARTON (920HF:JE)	

HARDWARE LIST

#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3
#2	7-685-782-01	SCREW +PTT 2X5 (S)
#3	7-624-106-04	STOP RING 3.0, TYPE -E
#4	7-682-645-01	SCREW +PS 3X4
#5	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3
#6	7-682-548-04	SCREW +P 3X8
#7	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
#8	7-621-732-08	SCREW
#9	7-682-547-09	SCREW +P 3X6
#10	7-628-254-05	SCREW +PS 2.6X5
#11	7-624-102-04	STOP RING 1.5, TYPE E
#13	7-682-546-04	SCREW +P 3X5

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

9-973-500-11

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Home Video Group

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